DEC. 11 1959

PETROLEUM WEEK

A McGRAW-HILL PUBLICATION

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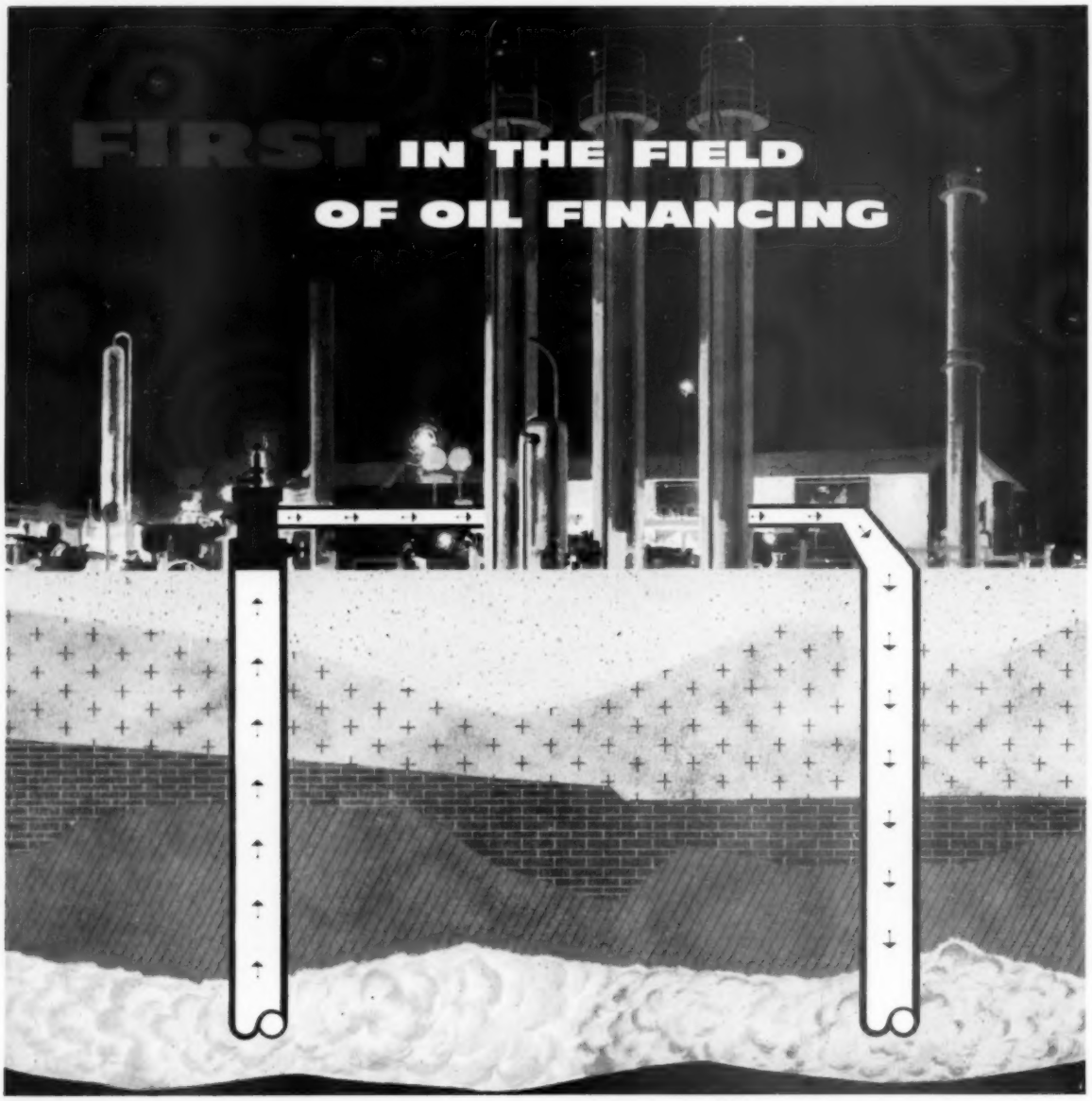

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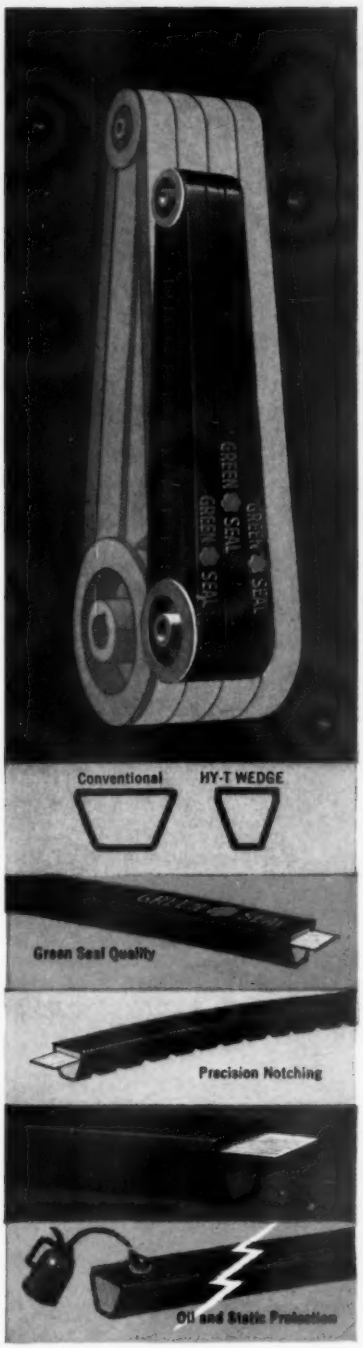

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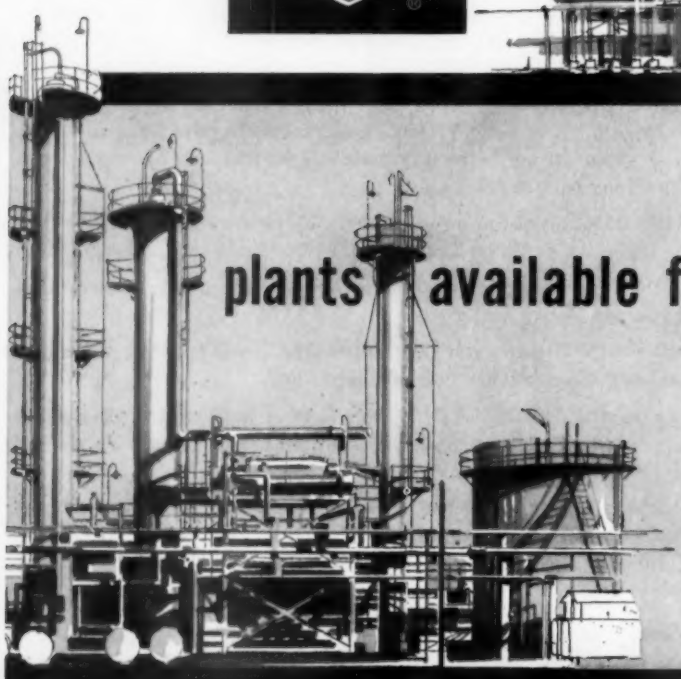

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INSIDE Slant

WAREHOUSING PROBLEM

Who is going to bear the brunt of the handling and warehousing of oil supplies in the new areas around the world?

That is a question that Zeb Mayhew, deputy coordinator of world-wide production for Standard Oil Co. (N.J.), raised before a recent meeting of the Tulsa Nomads.

Mayhew acknowledged that much progress has been made in the extension of services all over the world. This, he said, is a logical growth, in that many services can be better performed by specialists.

He said jet air freight and modern material-handling methods may be able to relieve overseas operators of some of the expensive warehousing.

But the big question is should each oil company go it alone, as in the past, and as, in fact, has already started again here and there?

Or, as Mayhew says, should the oil companies build joint facilities?

Or should the suppliers build the whole works?

Or, again Mayhew asks, should a separate company be formed in which each oil company owns a portion?

All concerned should study the problem in order to work out how best to do the lowest-cost job.

LeRoy Menzing
EDITOR

See why ALCOA ALUMINUM makes a good design habit

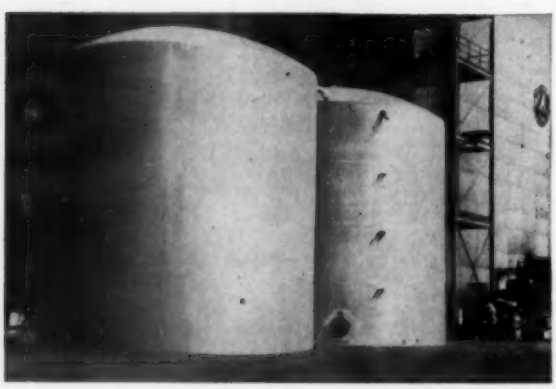
Requirement: A better way to store process liquids and gases
Key to Good Design: Use Alcoa Aluminum Storage Tanks

Whether product storage is an intermediate or final step in your processing operation, ALCOA® Aluminum Storage Tanks can help cut costs and maintain product purity. The production of glacial acetic acid is a prime example. For over 30 years ALCOA Aluminum tanks have been specified for storing this chemical because they resist corrosion and offer real economies in initial investment and in freedom from maintenance costs.

Thousands of aluminum tanks and tank cars have been constructed for the transport and storage of such chemicals as ammonium nitrate solutions, acrylonitrile, cryogenic substances and sour crude oils. Some of the many other products for which aluminum alloy tanks are well suited are listed below.

ALCOA can supply aluminum storage tanks for practically any processing application. They are made in a number of sizes ranging from 580 to 21,480 gal and are available in both horizontal and vertical construction.

Oleic acid is one of the many chemicals often stored in aluminum tanks. Aluminum preserves the color and purity of this product.



These aluminum storage tanks maintain the purity of steam condensate for a large public utility.

Fabricated from 3003 aluminum alloy, ALCOA Standard Storage Tanks measure 10 ft in diameter with varying lengths for different capacities. ALCOA also supplies special storage tanks to many processors. These can be furnished in intermediate lengths and capacities, and in a wide range of aluminum alloys for many process applications.

ALCOA engineers have worked closely with all segments of the process industries for over 40 years, and can help you specify the aluminum alloy storage tanks and other equipment best suited for your particular process application. ALCOA's unparalleled experience in this field is available to you for the asking. Write to the address on the coupon, stating your requirements as specifically as possible. ALCOA's development engineers will welcome the opportunity to work with you on your problems.

You can also take advantage of the wide selection of free ALCOA literature on aluminum for storage tanks and other process applications. Simply check the booklets you want on the coupon and mail to the address indicated. ALCOA will forward your material promptly and without obligation.

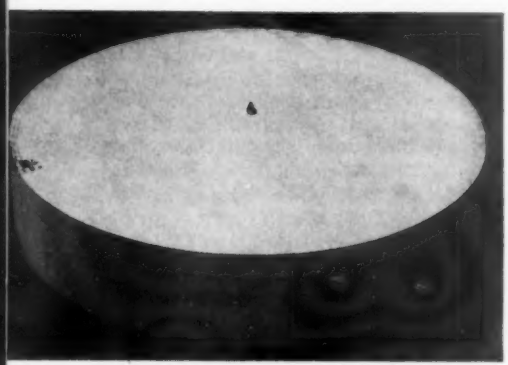
During 1959, ALCOA will conduct engineering conferences in a number of major cities on process industries applications of aluminum. Contact your nearest ALCOA sales office for full particulars and dates.

Typical chemicals stored in ALCOA tanks

Acetaldehyde	Glycerol phosphate
Acetic acid, glacial	Lacquer
Acetic anhydride	Methyl alcohol
Acetone	Napthenic acids
Acrylic acid, glacial	Naval stores
Acrylonitrile	Nitric acid (above 82% conc.)
Adipic acid	Nylon salts
Ammonium carbonate	Oleic acid
Ammonium nitrate solutions	Phenol
Ammonium thioglycolate	Propyl alcohols
Amyl mercaptan	Propylene glycol
Animal oils	Resins
Benzene	Rosin
Butyl alcohols	Sorbitol
Cellulose acetate	Solvents
Edible oils	Stearic acid
Ethyl acetate	Sugar solutions
Ethyl alcohol	Toluene
Ethylene glycol	Trichlorobenzene
Fatty acids	Turpentine
Gasoline	Water (distilled or deionized)
Glycerine (natural & synthetic)	Waxes

Fatty acids are not discolored by contact with aluminum.

Aluminum's light weight assures easy handling and storage for this 600-liter nitrogen container. The tank is fabricated from Alcoa Aluminum Alloy 5154.



The world's largest all-aluminum tank stores 2½ million gal of ammonium nitrate at 180°F. Prime consideration here was the need for uninterrupted storage service with a minimum of maintenance. The tank stands 26 ft high, and has a diameter of 128 ft.

Typical mechanical properties of Alcoa Aluminum Alloys

Alloy and Temper	Tension			Hardness, (2)	Shear Ultimate ksi	Fatigue Endurance Limit, ksi	Modulus of Elasticity ksi
	Strength, Ultimate	ksi Yield	Elongation % in 2 in. (1)				
5052-O	28	13	25	47	18	16	10,200
5083-O	42	21	22	73	26		10,300
5086-O	38	17	22	65	23		10,300
5154-O	35	17	27	60	22	17	10,200
5454-O	36	17	22	62	23		10,200
5456-O	45	23	24	75	28		10,300

(1) ⅛-in. thick specimen
(2) Brinell; 500-kg load, 10-mm ball

ASME design stress values for various Alcoa Aluminum Alloys (psi at 100 degrees F)

5052..... 6,250 psi
5083.....10,000 psi
5086..... 8,700 psi
5154..... 7,350 psi
5456.....10,500 psi

Alcoa standard tanks are constructed of stock components and are available for fast delivery. They provide the safest storage for a wide variety of chemicals, petrochemicals and petroleum products.

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Please send me the following literature covering Alcoa Aluminum for storage tanks and other uses in the process industries:

- ☐ 10387 Alcoa Standard Storage Tanks
- ☐ 10460 Process Industries Applications of Alcoa Aluminum
- ☐ 10508 Cleaning and Maintenance
- ☐ 20849 Resistance of Aluminum Alloys to Weathering and Resistance of Aluminum Alloys to Chemically Contaminated Atmospheres
- ☐ 20265 Have You Tried Aluminum in Your Refinery?
- ☐ GL93 Aluminum in the Pulp and Paper Industry
- ☐ 20268 Resistance of Aluminum Alloys to Fresh Waters

Name _____

Company _____ Title _____

Address _____

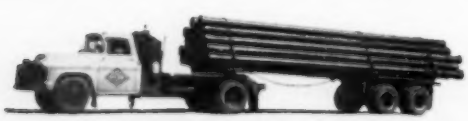
City _____ State _____

Congrats and $25 for this quip to DEAN H. CROWELL, 5919 Vickery Boulevard, Dallas, Texas

Joe Roughneck's seen dusters in his day, but he's brought in many a producing well, too. And throughout the years, Joe's been the one to specify Lone Star API pipe. He knows it's tough, dependable and available conveniently in the heart of the oil country.

Made by the oil country's own steel mill, Lone Star casing, tubing and line pipe is known for quality. Our ultra-modern plant maintains rigid quality control from ore to finished product.

Neighbor, wherever you are, specify Lone Star and we both get a good deal.



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DEPT/Opinions

Views That

"It is our belief the highest national interest is served by maintaining a healthy, dynamic oil industry, and that to insure this it is important to preserve incentives—such as the oil depletion principle—which encourage the search for oil."

—HENRY C. BRUNIE
President
Empire Trust Co., New York

"Simply having a wealth of natural resources does not make Canada great. But wise use of them stimulates the nation's growth. Natural resources do not create national wealth until they are used."

—CANADIAN PETROLEUM ASSN.

"We took a long and costly strike to retain our right to operate the [El Dorado] plant as efficiently as possible. Unless we are skillful and considerate in our relations with returning employees, we can lose the benefits of preserving those rights.

"A smooth-running team is the key to efficiency and job security, and such a team can be created only in an atmosphere of harmony and friendly relations. Creating and maintaining this atmosphere will be a real test of . . . supervisory skill . . ."

—H. A. HEISS
Manager
El Dorado (Ark.) refinery
American Oil Co.

"The one thing that has made this industry so successful and great has been its self-reliance. The minute we begin turning to government for help we begin to lose our self-reliance. The history of this demonstrates that once government begins to interest itself in social and economic matters, its interest tends to grow. Controls breed controls."

—M. J. RATHBONE
President
Standard Oil Co. (N.J.)

"A year ago we had in prospect an improvement in earnings within the near future. Today, net profits are lower because there is a nationwide excess in refining capacity not likely to be balanced with demand before 1963. Short-term prospects . . . are not as good as a year ago."

—R. L. TOLLETT
President
Cosden Petroleum Corp.

"In a free economy such as ours, job security depends ultimately on the security of the enterprise—its ability to stay in business through sound, efficient, and economic business prac-

Make News . . .

tices. True job security cannot be negotiated."

—T. S. PETERSEN
President
Standard Oil Co. of California

"I think the job [Project Mohole] will cost $15-million to $20-million. We'll spend around 18 months drilling the hole at a cost of about $10,000 a day. I would say that within five years we can get to it."

—DR. ROGER REVELLE
Director
Scripps Institution of Oceanography

. . . and Letters

Dear Sir:

Your magazine mentions Vazquez's [Siro Vazquez, production coordinator of Jersey Standard] conference, "Venezuela Warned It's in Tough Spot" (PW—Oct.30'59,p38), and on the same page there is an item on the reply I gave when my opinion was asked. This shows considerable responsibility and efficiency. However, things cannot always be so perfect.

In the article "Venezuela Debates National Firm" (PW—Nov.6'59,p 106), ample information is given on the discussion referring to the National Petroleum Corp. The information given by an official, Penaloza [Director of Economics, Ministry of Mines], appears. But the correction which I made—that it cannot be a purpose of the corporation to anticipate taking over expired concessions at such a remote time as 24 years hence—does not appear.

We do not know what will be best for Venezuela at that time. It could be what has been said before—to transfer operation to the corporation. But perhaps it will be more economic and convenient for Venezuela at that time to make a special contract with the prior operating company. This would all depend on many circumstances, as I explained.

I thank you again for the time you spent in clarifying Venezuela's point of view in your recent articles (PW—Oct.16'59,p24; Oct.23'59,p18).

JUAN P. PEREZ ALFONZO
Minister of Mines & Hydrocarbons
Republic of Venezuela

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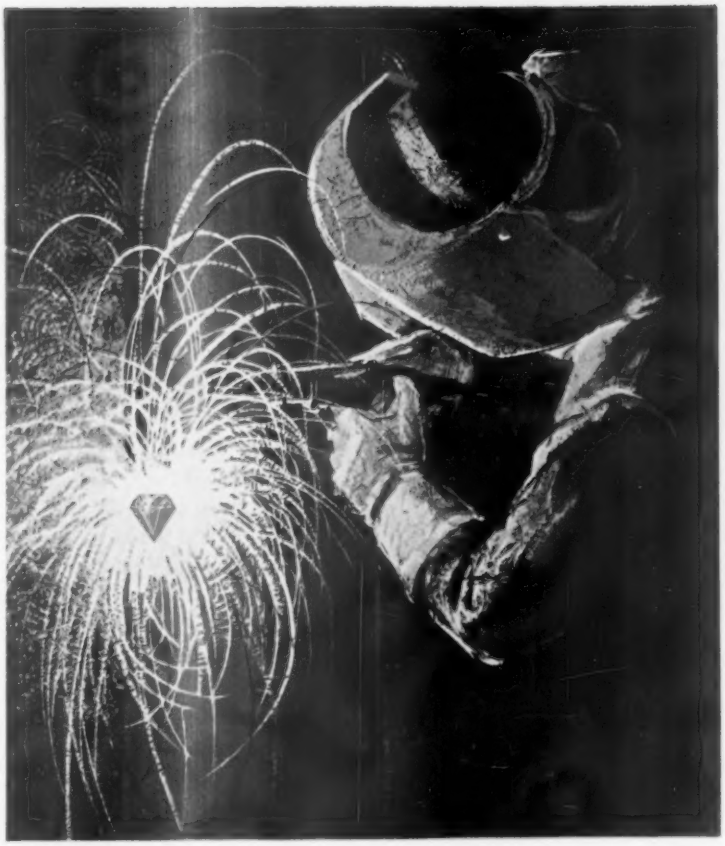

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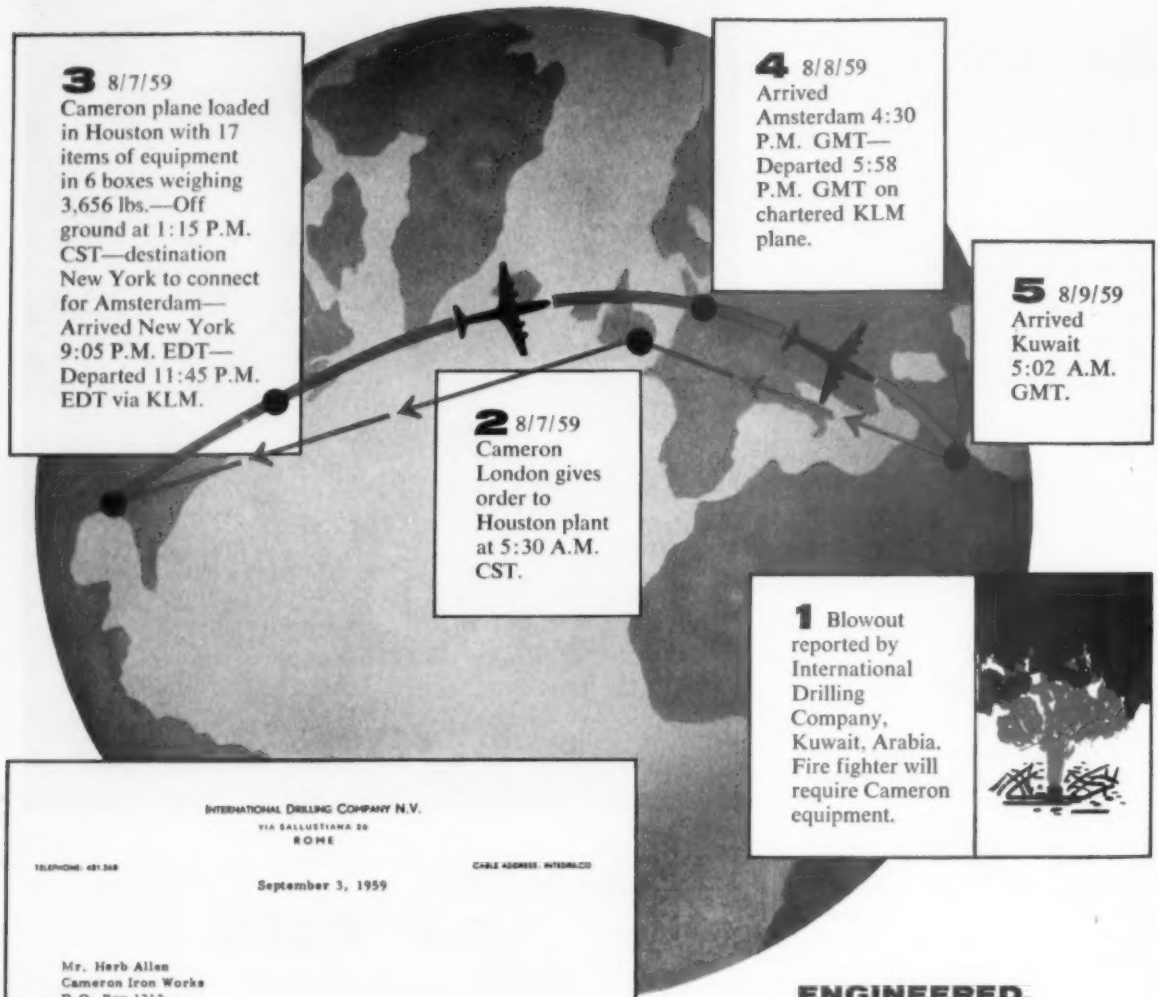
3 8/7/59
Cameron plane loaded in Houston with 17 items of equipment in 6 boxes weighing 3,656 lbs.—Off ground at 1:15 P.M. CST—destination New York to connect for Amsterdam—Arrived New York 9:05 P.M. EDT—Departed 11:45 P.M. EDT via KLM.
4 8/8/59
Arrived Amsterdam 4:30 P.M. GMT—Departed 5:58 P.M. GMT on chartered KLM plane.
5 8/9/59
Arrived Kuwait 5:02 A.M. GMT.
2 8/7/59
Cameron London gives order to Houston plant at 5:30 A.M. CST.
1 Blowout reported by International Drilling Company, Kuwait, Arabia. Fire fighter will require Cameron equipment.

INTERNATIONAL DRILLING COMPANY N.V.
VIA SALLUSTIANA 30
ROME

TELEPHONE: 481.348 CABLE ADDRESS: INTERNACO

September 3, 1959

Mr. Herb Allen
Cameron Iron Works
P.O. Box 1212
Houston, Texas

Dear Herb:

We are getting some of the debris cleared away and are beginning to see some daylight after our recent unfortunate experience in the Persian Gulf. If things go according to schedule we now estimate that our replacement equipment will arrive in the Persian Gulf approximately October 20th and we should be back to drilling before the first of December. Herb, I cannot begin to express my appreciation to you for your organization's extreme cooperation during this emergency. Cameron's understanding of the problems and the way both your London and Houston staff came to the emergency certainly proves that Cameron Iron Works is geared to meet the necessities of the oil industry.

At 11:50 Friday morning (August 7th) we received word from our organization in the field of the blow-out prevention equipment that they would require from you to attempt to bring the well under control. This material was gotten together, boxed, export papers handled, flown from Houston to New York in your aircraft, from New York to Amsterdam by KLM commercial airliner, and from Amsterdam to Kuwait in a KLM chartered plane and was en route to the location from the Kuwait customs in a total elapsed time of forty hours. You can offer no better service than this.

With my sincerest thanks to your organization and my personal thanks and kindest regards to you,

Yours very truly,

Monty R. Garrison

MRG:bv

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60-Second Summary / WHAT'S HAPPENING IN OIL

December 11, 1959

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Oil field equipment buyers rank "service plus" as a key factor in their selection of suppliers. A Petroleum Week survey also reveals that price trails quality and availability of spare parts in purchasers' criteria. . . . p. 15

•

The antitrust case against 29 oil companies for pricing "conspiracy" won't go to trial in Tulsa until Feb. 1. The government said it could not prepare its case before Jan. 15. . . . p. 18

•

The economics of cat cracking are being improved through better preparation of feedstocks. The upgrading techniques are considered to be the outstanding achievements in refinery technology for the near future. . . . p. 43

•

New approaches to secondary recovery techniques are being pushed in the laboratories. They're expected to play an important role in future production. . . . p. 27

•

Dealer turnover costs time and money, so suppliers are putting heavier emphasis on training programs. Examples are the expanded plans of American Oil and Mobil Oil. . . . p. 58

•

Radiotelephones will be used shortly to supplement radar as a marine safety device. These features will be tested in Delaware Bay and River. . . . p. 50

•

Slim-hole drilling is picking up fast in Mississippi and east-central Louisiana. Contractors figure they're saving 12% to 14% in comparison with standard rigs. . . . p. 22

•

Mexico is the arena for another big contest among U.S. oil field equipment manufacturers. At least 15 are in the race now, all pushing to get into local production. . . . p. 53

•

Attractive wellhead prices for both oil and gas are keeping operators in Ontario and the Lake Erie area happy. The output is modest, but the incentive is there to enlarge exploration efforts. . . . p. 32

•

Ratable purchasing of crude, and well spacing, will be studied by the Interstate Oil Compact Commission. At its annual meeting, the group warned member states of the possible ill effects of a National Fuels Policy. . . . p. 18

•

A third American group is making plans for a pipeline outlet in Libya. Construction may be started in 1961. . . . p. 52

Up to the Minute / SIGNIFICANT LATE NEWS

AT-A-GLANCE PETROLEUM WEEK

December 11, 1959

Gulf Refining reportedly will run Canadian crude almost entirely at its Toledo (Ohio) refinery. The Canadian crude, exempt from U.S. import controls, will be supplied to the 43,000 b/d plant by British American Oil (which is controlled by Gulf) through the Buckeye Pipe Line system from Sarnia, Ontario. The action is believed to be part of a move by British American to "seek outside markets for Canadian crude," as recommended by the Borden Commission.

Alberta Premier E. C. Manning this week urged that the U.S. and Canada "devise integrated" arrangements for North American Oil. He suggested that the Borden report be adopted as Canadian national policy, after which Cabinet-level discussions should be held with the U.S. to cover oil produced on this Continent.

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Union Oil of California has adjusted some Louisiana crude prices. The company raised its East White Lake and West White Lake crude prices from $3.15 to $3.23, effective Dec. 1, based on a contract with Gulf Oil Corp. About 4,000 b/d of southern Vermillion Parish crude are affected. Union also cut its Vinton field (Calcasieu Parish) prices 8¢, to $3.25 for 40-gravity and above, based on a contract with Continental Oil Co., and switched to a 2¢ differential from a 3¢ differential. About 3,000 b/d are involved.

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Eleventh-hour protests by coal industry leaders forced the government to delay action on planned import program changes. A presidential proclamation, and a series of revised allocations, were to have been issued Monday, but coal's intervention upset the timing. At midweek, the changes were being held in abeyance, although clearance was anticipated shortly.

The coal people urged the Interior Dept. to cut, not increase, the level of residual fuel imports for the first six months of 1960. Indications at midweek were that the residual quota increase would be less than 100,000 b/d, and that crude and unfinished oils would be raised 30,000 b/d.

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Utah has been asked to make a further cut in the maximum per-well production in the Greater Aneth area. Superior Oil Co. has asked the Oil & Gas Conservation Commission to reduce the allowable from 350 b/d to 230 b/d per 80 acres.

Superior's petition alleges that underground waste is equal to 22,500 b/d based on total production of 90,000 b/d in the area. Superior's proposal, which is not expected to be heard before next March, would grant an additional 115 b/d allowable per 80 acres on waterflood projects. Superior and others have argued for several years that spacing closer than 80 acres causes underground waste.

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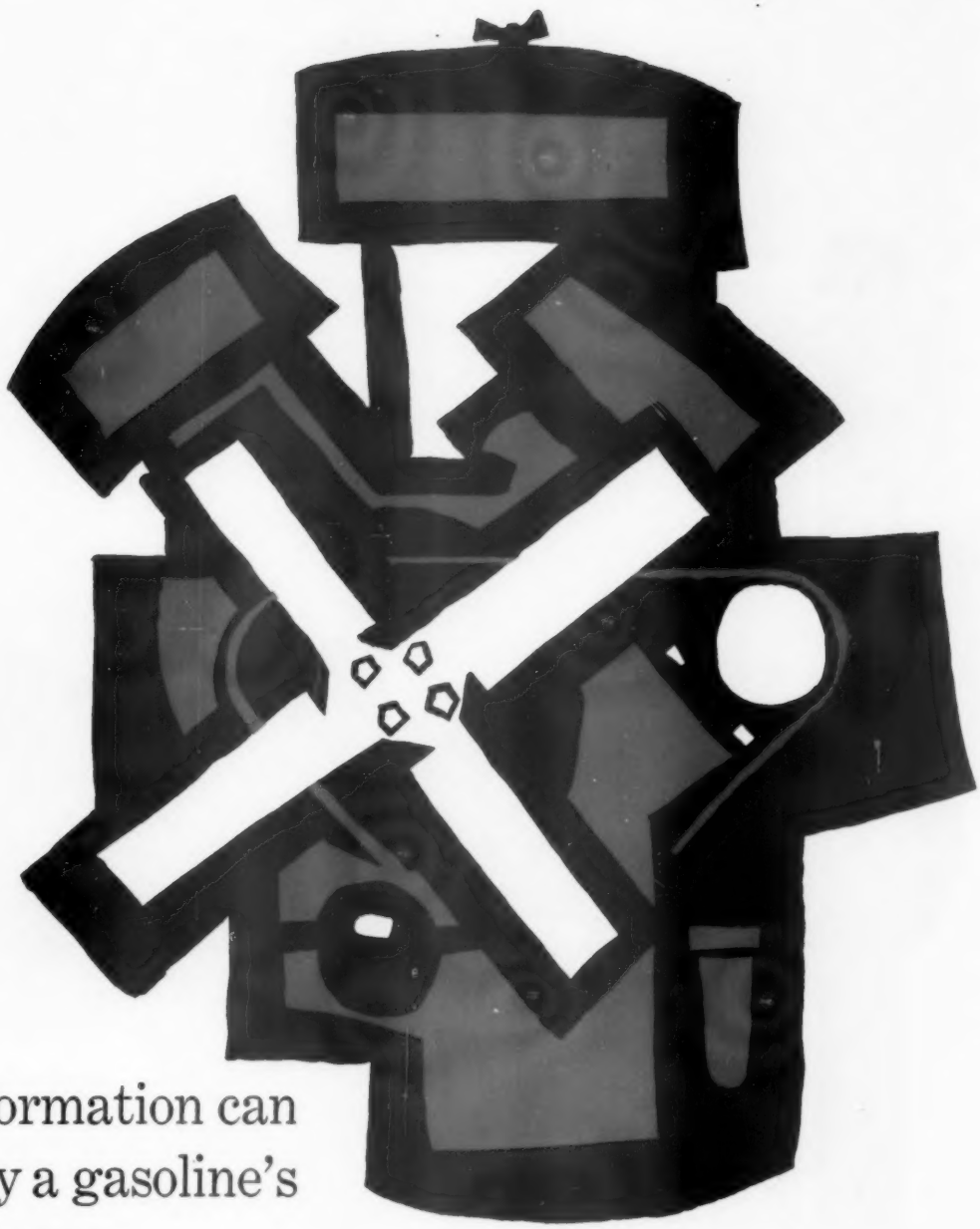
Indiana Standard's chairman believes that, with certain "ifs," supply and demand should soon be in better balance. Frank O. Prior says the balance should be reached if, "as it is reasonable to expect," the industry has learned a lesson from this year's "senseless overproduction."



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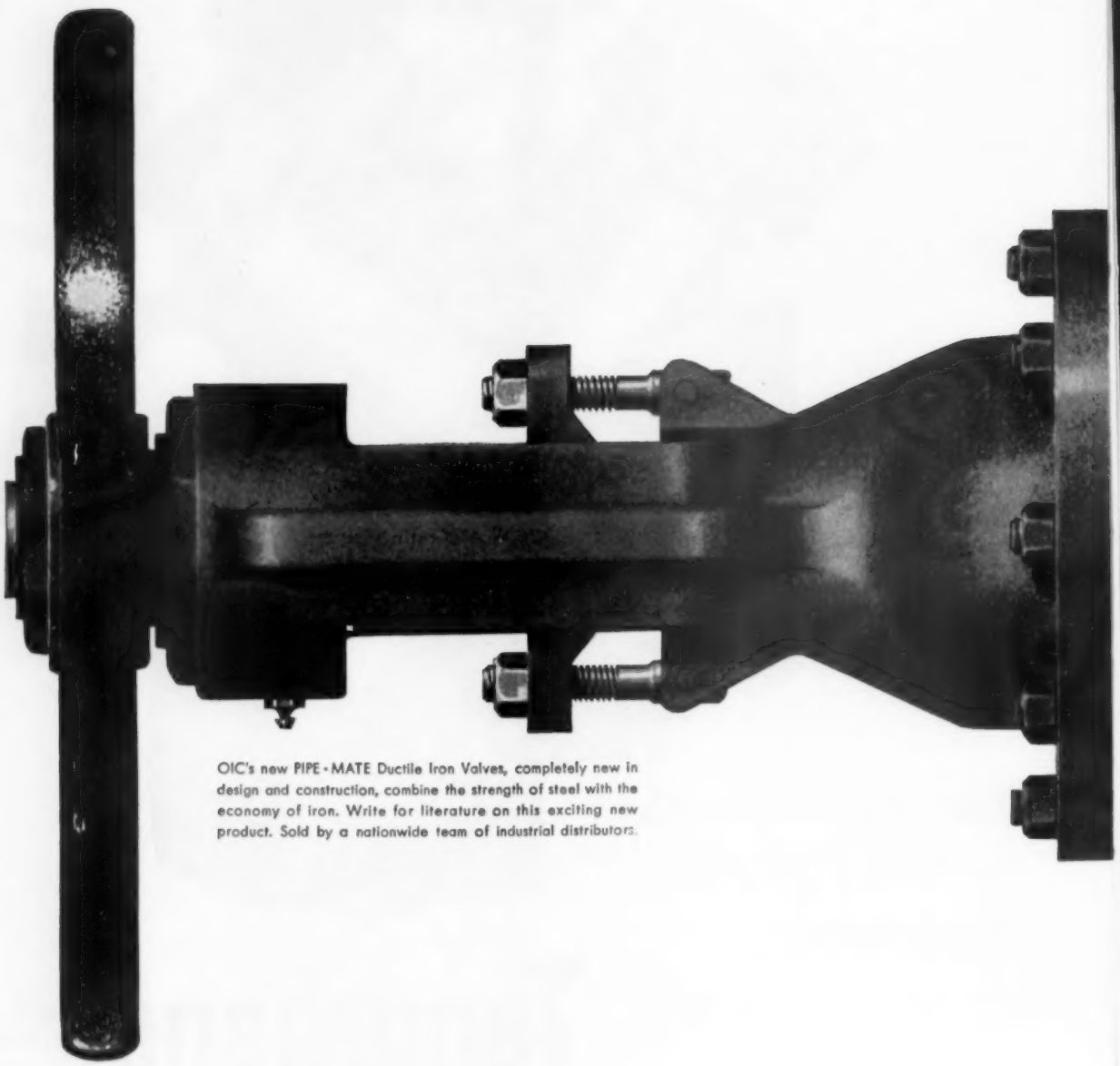

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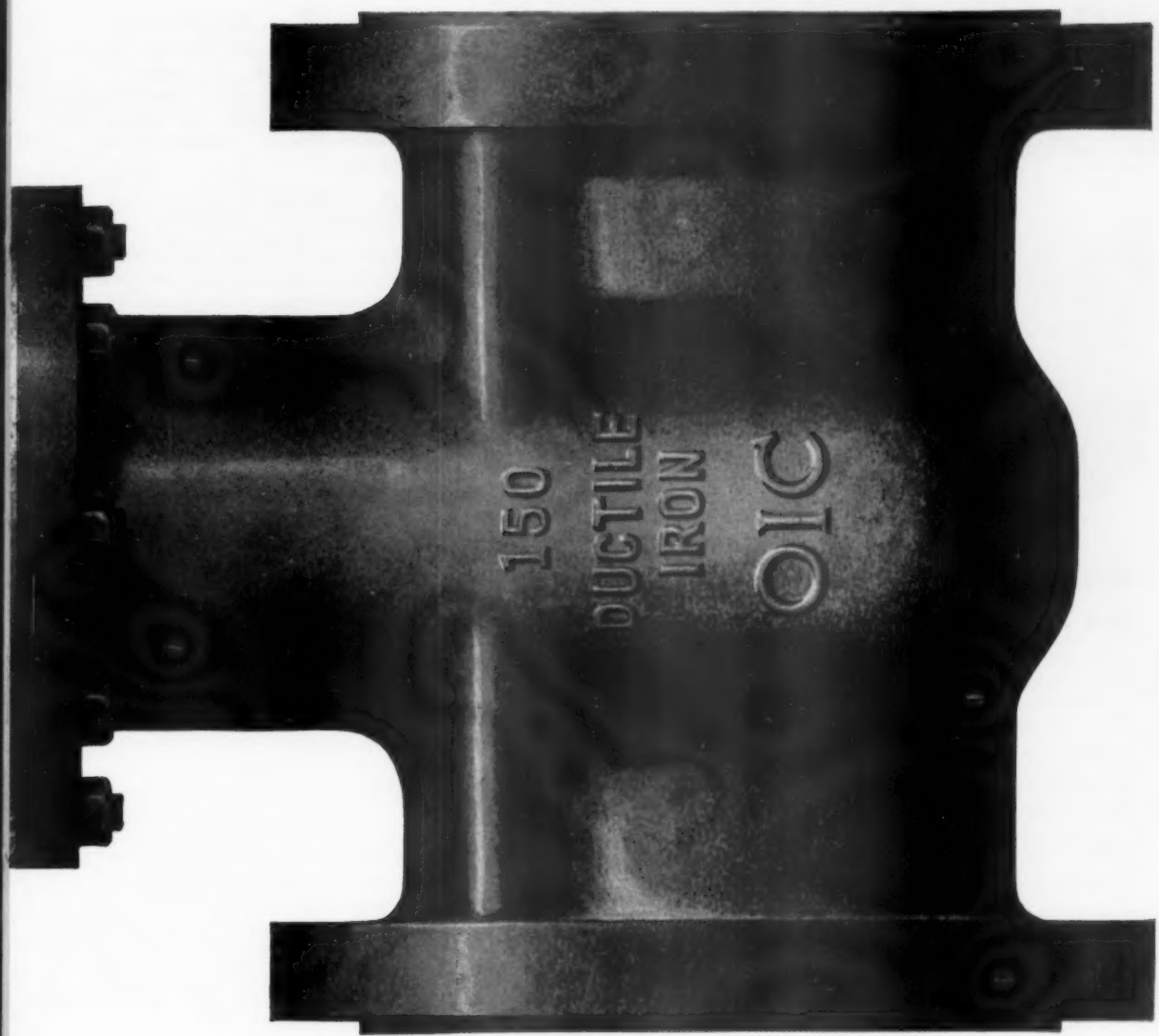

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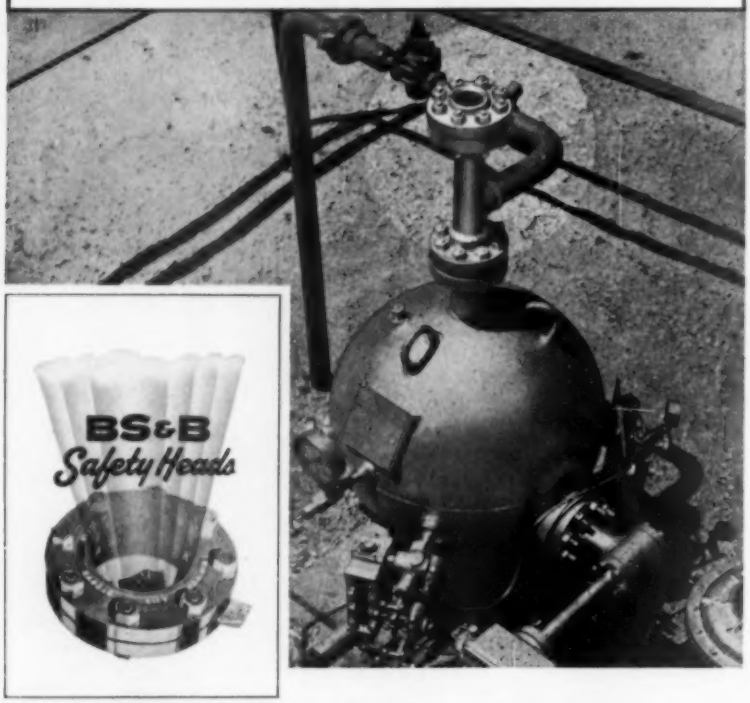

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Service Counts Most With Buyers

- **Equipment purchasers agree that price is a key factor, but service, quality, and availability of spare parts are more important as criteria in placing orders.**
- **They feel that suppliers are doing an excellent job, but that there's room for improvement in the cataloguing and handling of spare parts, and in field store stocks.**

Purchasers of oil field equipment consider service, quality, and availability of spare parts more important than price in selecting the suppliers with whom they do business.

This is the most significant conclusion of a PETROLEUM WEEK survey to determine what factors predominate among the men who buy equipment and supplies.

The survey reached into three big purchasing areas—the Gulf Coast, the Mid-Continent district, and the West Coast. Respondents ranged from field personnel to the top level, all of whom, however, are equipment purchasers. That was the only limitation.

They agree that price is a basic factor, but that it isn't as important as the others in making purchasing decisions.

"First we look for quality, service, and availability," one buyer says. "If all these factors are equal, then we look for price. Quality and service might well outweigh the initial cost, however."

A purchasing agent for a major Texas firm adds a similar comment, also interjecting "past performance" as a factor before price. Still another notes that "considerations which may offset price are availability, deliverability, spare parts, and service."

Comments from the buyers make it obvious that if a supply company wants to get new business, or even to maintain its present sales volume, it must concentrate on giving the very best of service.

Quality, performance, availability —all help to formulate purchasing decisions. But (and this is the key) where these factors are equal, then service usually dictates the orders.

"The prices, generally speaking, are equal, so the service is the important thing," says a Gulf Coast division purchasing agent for one major. Another pinpoints it this way:

"If the service is slow, we call this to the attention of the supply company, then we lay off them for a few months. That straightens them out in a hurry."

From a Mid-Continent independent operator comes this comment:

"Service is the major point—can they take care of our needs in the particular area where we are working? Our field people are instructed to deal with the companies that can best supply their needs wherever they happen to be."

Still another says simply, "Our policy is to change houses if service is not consistently good." He adds that he did that just recently to one supply company, and "that jacked them up in a hurry."

But this insistence on service doesn't mean that suppliers should spend $10 to deliver a $2 item.

That's "silly," in the opinion of the purchasing agent of one of the country's biggest oil companies. He feels that suppliers shouldn't take equipment to the field.

"In the long run," he explains, "this extra overhead causes either a weakening of the financial picture, which in turn causes them to close field stores, or it causes price increases for the equipment. Both are undesirable."

A Houston drilling contractor also notes that, "when they provide us with all of their superspecial field service, they have to charge more for the items we buy."

The time may come when supply companies may have to charge for delivery service, just as they are doing in Canada.

This is the belief of a Tulsa independent, who added tersely, "maybe it's almost here now." Most supply houses, he says, "go beyond what is expected of them, and thus add to the cost of small items by their willingness to drive long distances to deliver supplies."

Generally speaking, equipment purchasers define the word "service" as fast action on orders, and a readily available supply of materials.

"Promptness in delivery," is the way one Mid-Continent purchaser phrased it.

To a Southwest major's purchasing agent, it means "less red tape to go through in handling orders." It also means "being anxious to please."

In a slightly more caustic vein are comments that, "there are times when we have to push to get deliveries on time," and, "most of our difficulties are in getting them to follow up on orders."

By and large, operating men are inclined to feel that quality is about

Purchasers Reflect Opinion Unanimity

This story resulted from a careful, in-depth survey by Petroleum Week staffers to determine how equipment purchasers made up their minds on their buying policies and strategies.

The survey reflected a remarkable unanimity of opinion on the major points, with only minor deviations. Thus, Petroleum Week feels that it represents an accurate assessment of the more important factors involved in purchasing policies, which should be of particular interest to all suppliers.

the same among the reputable brands.

"There are no big differences," says a pipeline purchasing agent. "We buy the same quality material regardless of whether it comes from a major or an independent."

A big company agent mentions that "we have specifications made by our engineers . . . Therefore the quality is about the same."

In a similar vein, another says that his company "has a standardization committee which establishes basic requirements and minimum specifications for any equipment we purchase."

Once in a while, however, prejudice intervenes. This comment comes from a Tulsa independent: "If the field men get the units they want, everything functions beautifully. But if we ring in a brand that they don't happen to like, it'll stay in the repair shop half the time."

For the most part, prejudices haven't much effect on large items.

The matter of spare parts is a sore point with many purchasers. They want better cataloguing, more efficient handling, and bigger field store inventories.

"This problem is so acute that on some of our purchase orders we make the supplier state in writing that he will keep the needed inventory," says one major company spokesman.

"There is a terrific difference in the prices of some parts," says another. "Bearings, for example, are about half the price if bought as bearings, rather than as engine parts.

"Some companies have told me that they will actually sell pumps at a loss, and depend upon subsequent sale of replacement parts to realize their profit."

The purchasing boss for an independent declares that, "We won't put a unit in the field unless we know that some spare parts are stocked reasonably close by."

This operator says his company would rather buy a more expensive unit if spare parts are nearby than a cheaper one whose spare parts are not readily available.

Most purchasers feel strongly about cataloguing procedures. Right or wrong, many feel that "interchangeability is a jumbled mess," due to what they say are "inefficient cataloguing procedures."

A good many, too, express exasperation at the lengths they sometimes have to go to follow up on orders.

Purchasers feel that field stores are far from obsolete; that they are preferable, by far, to central warehousing.

Even though they are aware that any single locality may be overburdened with field stores, the buyers say a widespread distribution of these units by a supply company influences them a great deal in their decisions.

Few think central warehousing would be satisfactory. Typical comments:

- "Field stores are most important to our operation. We have done away with our own stocks."
- "We rely on the oil field supply firms to carry the inventory for the industry. It is their place to do this sort of thing."
- "Field stores are necessary. Obtaining supplies from central warehousing points would be costly in time and money."
- "If we had to wait for them to ship supplies in from a central warehousing point, we might as well deal direct with the manufacturers."

While the bulk of the purchases are from major, integrated houses, equipment buyers make little distinction between them and the independents.

The ratio of buying varies considerably, and the reasons range all across the board—service, availability, credit, company spread-out policies, and personalities.

The breakdown on purchasing by one big Southwest oil company runs like this: 29% of the total budget with 12 firms; the next 14% with 22 firms; the next 25% with 122; 17% with 242; 12% with 2,000; and 3% with 3,400.

Most stick to reputable brands, emphasizing that, on principle alone, they dislike "off-breed" brands, and "brokers" whose "only overhead is buying coffee for people."

Some made a point, too, of noting that manufacturers hurt themselves by trying to sell direct, rather than through supply store outlets.

The ability to deliver the goods in a pinch is an important consideration.

Both the integrated suppliers and the independents have their champions in this respect. Some buyers feel that big supply houses represent the best way of assuring materials; others say that the independents come through consistently.

As a group, the purchasers seem to care little whether the suppliers have field engineering services available, or research and development staffs.

This isn't universally true, however.

The vice-president of a West Coast independent, for instance, says the existence of such staffs "is probably the best reason in the world for supporting major supply companies. It's the only way in the long run that you're going to get better products."

And a Gulf Coast drilling contractor says he feels morally obligated to buy from one firm, which spends millions on research, explaining: "I couldn't stay in business without it."

Yet this same contractor doesn't care whether the supplier has a research department, just so long as the manufacturer does.

Despite their criticisms, the men who do the buying think the supplier segment is performing an excellent job for the oil industry.

Some typical comments:

- "They're doing a good job."
- "They're so highly competitive they have to be good."
- "Efficiency at local levels varies widely, but for the most part, it is good."

Their suggestions for improving supply conditions range from down-to-earth, common-sense proposals to blue sky projects.

One equipment buyer proposes "mobile supply stores" on truck-trailers, which could move from area to area, depending on activity.

Another feels that the time is ripe for supply stores to start handling a more complete stock of lease automatic custody transfer items.

A drilling contractor says suppliers "could probably stock half as much and do twice as good" by inventorying the rigs they service.

On the other hand, a big company's purchasing boss believes that the industry would be willing to pay a fee to suppliers for carrying more comprehensive inventories of component parts, particularly for refineries.

Special Dec. 30 Issue

Since both holidays, Christmas and New Year's, coincide with Petroleum Week's Friday publication date, the two issues will be consolidated into a single special issue on Dec. 30.

There will be no issues dated either Dec. 25 or Jan. 1.

The combined Dec. 30 issue will carry a special report on the industry's outlook for 1960 and the immediate future years.

While there will be no Jan. 1 issue, subscribers nevertheless will receive their full complement of 52 weekly issues in 1960 because it is a year of 53 Fridays.

Texas Seeks More Inventory Data

New data on the availability of readily dispatchable crude in storage may become available after next Friday's Texas Railroad Commission hearing.

The commission last week asked all purchasers of Texas crude to submit another inventory report, the second in as many months.

The new information being sought by the commission is a report from each buyer on inventories of crude immediately available—excluding tank bottoms and required pipeline fill.

It wants a comparison of immediately dispatchable inventories with the individual companies' desired, immediately available stocks, as of Dec. 1.

Last month, the buyers reported to the commission on their over-all stocks of crude and products, including tank bottoms and pipeline fill, compared to desired levels as of Nov. 1.

While the data on availability from Texas purchasers will not reflect the nationwide dispatchable stocks, it will provide some indication of the change in required tank bottoms and pipeline fill since the last survey was made five years ago.

The previous study was made in 1954 by the National Petroleum Council's Petroleum Storage Capacity Committee, headed by L. S. Wescoat, a Pure Oil Co. executive.

It showed that slightly less than 50% of the total stocks of crude and products in storage were available. The findings were that 100 bbl. in storage were required for every 47 bbl. of available inventories if the industry was to "enjoy complete flexibility."

In 1952, the same NPC committee found that only 37% of the crude in storage, and only 60% of the products, was immediately dispatchable.

Buyers of Texas crude also have been asked to report again on their individual product stocks, indicating that the commission was dissatisfied with the similar reports made last month.

At the November hearing, 14 companies whose individual crude and products stocks added up to 62.1% of nationwide inventories, reported that their total stocks were 4-million bbl. under the desired level.

The inference was that the existing surplus inventories—53.6-million bbl. over what had been considered desired on Nov. 1—were held by a minority of companies.

The commission directed the companies to report crude and product inventories and the desired levels in barrels—not in days supply or in a range of barrels.

The commission criticized two companies at the November hearing for using days supply and ranges.

The data for next Friday's hearing must be submitted by Tuesday.

Crude stocks during most of 1959 have been kept at relatively tight levels, due both to restrictions in some producing states and to high runs by refiners.

The total U.S. stocks of 252.7-million bbl. at the end of November were nearly 5-million bbl. below a year earlier, and 27-million bbl. under November, 1957.

Producing from 50,000 ft. means . . .

Major Equipment Change Needed

Present equipment could be used to drill a 50,000-ft. hole, but it would require major modifications.

That's the opinion of three experts —Jack Abernathy, president of Big Chief Drilling Co.; R. L. Guernsey, field engineer for Jones & Laughlin Steel Corp.; and Harold Kelley, chief engineer of Phillips Petroleum Co.'s production department.

The three discussed drilling and producing from such a depth last week at a committee meeting of the Mid-Continent section of the American Society of Mechanical Engineers, in Tulsa.

The casing program would have to be carefully engineered to reduce the load on hoisting equipment to a minimum, the three agreed.

Abernathy suggested a casing program of 9⅝-in. pipe to 25,000 ft., 7-in. liner from 25,000 to 35,000 ft., and 4- to 4½-in. liner from 35,000 to 50,000 ft.

Guernsey proposed setting 13⅜-in. casing to 15,000 ft., 9⅝-in. from 15,000 to 30,000 ft., 7-in. liner from 30,000-40,000 ft., and 5-in. liner from there to 50,000 ft.

Present drawworks are capable of handling the load, Abernathy said, but braking systems would have to be improved. Improved mud pumps capable of handling pressures of 3,000 psi. and up over long periods might prove adequate.

The biggest problem—especially in producing from such a hole—would be the high bottomhole temperatures, of between 750F and 1,000F, that could be expected.

To offset the problems created by the high temperatures, the panel recommended:

- More work on perforating tools, since the present maximum operating limit is 430F;
- Modification of logging equipment, since the highest present temperature tolerancy is about 700F;
- Improvement in the metallurgy and basic design of Christmas tree designs to handle surface pressures of more than 40,000 psi. and wellhead temperatures above 400F; and
- Better corrosion prevention measures.

Artificial lift problems are unlikely, since gas or gas-condensate would probably be the production found at 50,000 ft.

Sohio Expects to Hold Markets

Standard Oil Co. (Ohio) feels it is in good shape to retain its marketing position in Ohio despite the tighter competition created by new product pipelines in the area.

Charles E. Spahr, president, told the New York Society of Security Analysts this week that Sohio is counting on its strong refining and marketing position in Ohio, where over 90% of its products are consumed. "One out of three Ohio motorists look to Sohio for their gasoline and oil," he said.

"We have modern outlets located throughout the state," he added. "In 1958, 93 new Sohio locations were completed. In 1959, and again in 1960 . . . the number of new stations added will be about the same."

Sohio believes its research program is important to maintaining its strong position in Ohio.

Its budget for research next year will be the highest in the company's history. It will amount to about $2.6-million.

Study Set on Ratable Take, Spacing

The Interstate Oil Compact Commission has decided to "study" common-purchaser statutes and well-spacing rules of various states, and has issued a warning on the so-called National Fuels Policy.

Those were the most significant actions taken by the commission at its annual meeting in Philadelphia last week—the 25th anniversary of the compact.

At its closing session, the commission elected Gov. George Docking of Kansas (picture) chairman for 1960.

He succeeds Gov. J. Hugo Aronson of Montana for the one-year term.

Warwick M. Downing, chairman of the Colorado Oil & Gas Conservation Commission, was named first vice-chairman, and Miss Genevieve Blatt, Pennsylvania's Secretary of Internal Affairs, was named second vice-chairman.

The controversial subjects of common-purchaser laws and spacing regulations will be studied by the Legal Committee, headed by Ernest O. Thompson, chairman of the Texas Railroad Commission.

This committee prepared a suggested model conservation statute, after four years of study, but it did not include provisions for common purchasing and well spacing.

The request for a study of common purchasing of crude was made by Jack Campbell, general counsel of the Independent Producers & Royalty Owners Assn. of New Mexico.

R. M. Williams, attorney for Phillips Petroleum Co., suggested the study of well spacing.

The Legal Committee also decided to study an eminent-domain statute to facilitate underground storage of natural gas.

That was requested by Gordon Simpson, president of General American Oil Co. of Texas and outgoing president of the Independent Petroleum Assn. of America.

The increasing underground storage of gas, he said, which now amounts to a total capacity of 2.7-trillion cu. ft. in planned or operating projects in 21 states, poses several legal problems for the industry.

The warning over the National Fuels Policy came in a resolution urging the member states to watch developments which "might impair" oil and gas conservation programs.

Establishment of a National Fuels Policy has been pushed by a group of coal producers and the United Mineworkers. The oil industry, through many spokesmen, has opposed such a move, since it could lead to establishment of end-use controls on fuels by the federal government.

Gov. George Docking

The IOCC Resolutions Committee noted that petroleum and its products are in "adequate supply to meet ever-increasing civilian domestic requirements and, so far as can be foreseen, demands of any national emergency."

The commission decided to disband its import study group, which has been a source of controversy both within and without IOCC.

The group, known as the Committee to Study Effects of Oil Imports on State Oil Conservation Programs, was created in February, 1957. Its disbandment came up for discussion at this year's midyear meeting, in New Orleans.

At Philadelphia the committee itself, except for its chairman, Jake Blevins, of Oklahoma, voted to recommend to the commission's Executive Committee that it be disbanded.

The vote came immediately after the committee made its final report, which concluded that "imports affect conservation of domestic oil."

Four state governors acclaimed the compact commission as a perfect example of how well states can govern themselves without interference from the federal government.

Gov. William G. Stratton of Illinois praised the compact as an "object lesson in these days of a continual drive . . . to centralize government activity at the federal level . . ."

Gov. John Burroughs of New Mexico said the compact "can look forward to a future even greater than its past, and even more significant than its present."

Montana's Gov. Aronson said that the conclusion is inevitable that "conservation and percentage depletion are as dependent upon one another as crops and water."

And Gov. David L. Lawrence of Pennsylvania said production in his state's early history would have been "much better handled if the compact had been in existence."

'Tulsa' Trial Now Set for Feb. 1

The trial of the 29 large companies charged with conspiracy to fix prices has been postponed, at the government's request, to Feb. 1.

The new date was set this week in Tulsa by Federal District Judge Royce H. Savage, who will hear the case, after the government's chief counsel, Joseph E. McDowell, said the prosecution "could not possibly be ready to go to trial on the original date of Jan. 18."

The postponement was granted over the objection of defense attorneys.

Judge Savage told all attorneys that he hoped this week's pretrial conference would be the "final one" before the new trial date.

Government attorneys say their case against the companies will be "primarily a document case," based on more than 300 pages of documents, nearly all of which were furnished by the defendants.

"So far as we know," McDowell said, "all witnesses called will be employees of the accused companies."

At this week's conference, McDowell said the individual meetings with 13 of the defendant companies resulted in "a number of trial stipulations signed, but many which still require attention."

With the delay in the trial, the government now has until Jan. 15 to file its pretrial brief giving evidence of the alleged conspiracy to fix prices of crude and gasoline during January, 1957, and its expected line of testimony.

The defendants now have until Feb. 1 to submit their answering briefs.

What's New / IN THE INDUSTRY

The British Columbian government flashed a green light this week on Peace River Oil Pipe Line Co.'s plans for a 200-mi., $9.5-million crude line. The British American Oil Co. affiliate will start work next Spring on the line, which will open fields in the northern part of the province. The company won out over Trans-Prairie Pipe Line, Gibson Associated Oils, and Pacific Petroleums, whose plans were rejected as economically impracticable.

The company plans to build a 113-mi., $5.8-million line from Beatton River and Milligan Creek fields, via Boundary Lake field, to the Alberta border near Pouce Coupe. From there, a $3.7-million line would tie in to the parent company's existing Alberta feeder line, and thence into Transmountain Oil Pipe Line Co.'s line at Edson.

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The Federal Power Commission has been asked to decide the legality of favored-nation clauses. In its request, the California Public Utilities Commission objected to the failure of Examiner Glen R. Law to decide if favored-nation clauses are "void or voidable in the public interest" in his Nov. 16 opinion denying gas rate hikes to Pure Oil Co. FPC had asked Law to rule on the clauses, which give producers the advantage of higher gas prices paid by their buyers to others in the same area.

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The Independent Industrial Workers Assn. will continue as bargaining agent at Esso Standard's Baton Rouge refinery. The union swept to a 4-1 victory last week over three other unions in an NLRB election, which was seen as a stunning defeat for both the Teamsters and OCAW. The vote: IIWA, 2,561; Teamsters, 498; Baton Rouge Metal Trades Council, 50; OCAW, 124; no union, 42.

There appears to be settlement in sight for the five-month old strike at American Oil Co.'s Texas City refinery. According to B. F. Babin, plant manager, in some respects the two sides are actually further from settlement now than when the strike was first called.

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Saskatchewan's Minister of Mineral Resources took issue this week with the president of Tipro, who called the province's oil fields "unprorated." The Texas Independent Producers & Royalty Owners Assn. made the statement in a telegram to Canada's Prime Minister, asking him to review the recent price cuts on Midale and Weyburn crudes. The provincial minister, J. H. Brockelbank, retorted: "These fields have had proration applied on a voluntary basis since the beginning of production. When two prices over 35¢ apart were offered, voluntary proration temporarily and partially broke down because certain producers refused to sell at the low price. The new price . . . will eliminate this problem, and proration will be effective on a voluntary basis—or on a compulsory basis if necessary."

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A pipeline may be built to transport North Dakota crude into the Twin Cities area of Minnesota—via Canada. Western Crude Markets, Inc., of Denver, is looking at the possibility of linking fields in Bottineau and Burke counties, in northern North Dakota, with the Interprovincial Pipe Line Co. terminal at Cromer, Manitoba. The crude would move through the Interprovincial system to the Minneapolis-St. Paul region—and possibly on to Chicago through other lines. About 10,000 b/d of crude is available from these fields.

ANALYSIS

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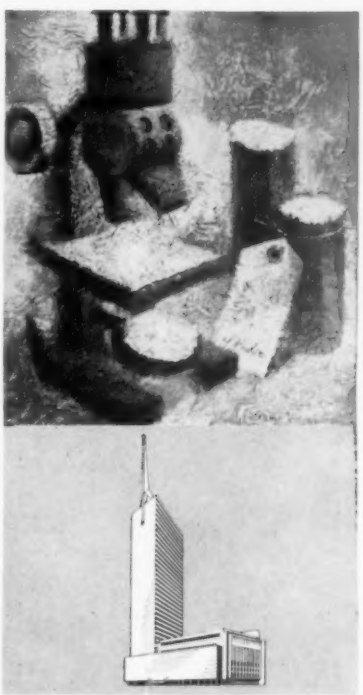

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Looking Ahead in Washington

McGraw-Hill
Washington
Bureau
December 11, 1959

Here are some election year possibilities in Washington that will be directed at the oil industry's pocketbook.

•

The Administration is weighing a request to Congress for another gasoline tax increase. President Eisenhower wants a balanced budget for fiscal year 1961, which starts next July 1. That budget will be the final one of his Presidency. Administration money experts are looking around for more revenues, and their eyes are stopping once again on gasoline and other motor fuels.

The amount being talked is ½¢ a gal. Such an increase would bring roughly $310-million a year into the special Highway Trust Fund, dedicated to construction of the interstate highway network. The President early this year asked Congress for an increase of 1.5¢ per gal. in motor fuel taxes. Late in the session, Congress voted a 1¢ boost. Highway construction schedules had to be slowed down. Now the Administration may seek the additional ½¢ it failed to get, to speed construction.

The request to Congress may come in the President's State of the Union message next month. He used the January message to ask for the last increase, and may do so again.

•

State governments are complaining about the slowed-down highway program. This is causing most of the pressure for another tax increase. Federal officials say the extra $310-million annually would help put highway construction within sight of its original goal—completion by the early 1970s. There would be strong opposition to another increase, however.

•

More hearings on oil and gas depletion are expected. The House Ways & Means Committee took only a broad look at the tax provision last week. The tax-writing body will get more specific before the lengthy hearings—which may extend through 1960—are concluded. Depletion on foreign production is particularly scheduled to get further study.

•

Tight money and high interest rates remain in the industry's financial picture. Robert Anderson, Secretary of the Treasury, and William McChesney Martin, chairman of the Federal Reserve Board, are calling the signals for 1960. The outlook is for continued economic growth, and present fiscal policies will be maintained as guards against inflation.

•

Oil-state lawmakers still want specific action by Congress on oil import controls. Sen. Ralph Yarborough (D., Tex.) said in a recent speech: "The executive order is a slender reed for the nation's mandatory limitation for oil imports to rest on. We need a stronger basis for the control of oil imports than this. Congressional legislation is needed to protect our valuable domestic petroleum industry, its employees, and our federal, state, and local governments." Another attempt for such legislation may be made in Congress next year.

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Slim-Holing on Increase in the South

Slim-hole drilling has established a firm and apparently expanding foothold in the contract-drilling market in Mississippi and east-central Louisiana.

One estimate is that roughly 10% of the rigs currently active in Mississippi are being used to drill slim holes.

Two contractors operating in the area—Rowley Drilling Co., of Natchez, Miss., and Woolf & Magee, Inc., of Shreveport, La.—have ten slim-hole rigs running in the two states. At least two other Shreveport-based contractors who operate in the Ark-La-Tex area also have slim-hole rigs.

H. L. Rowley, president of Rowley Drilling, which has six slim-hole rigs running, says: "If I had 15 to 20 slim-hole rigs, I could keep them all busy."

He adds that, on the basis of his 25 years of contract-drilling experience in 22 states, he sees slim-hole possibilities in other areas, too.

Rowley began slim-hole drilling in 1957, and has added rigs since as demand increased. He added his latest—a Brewster N-7—in September.

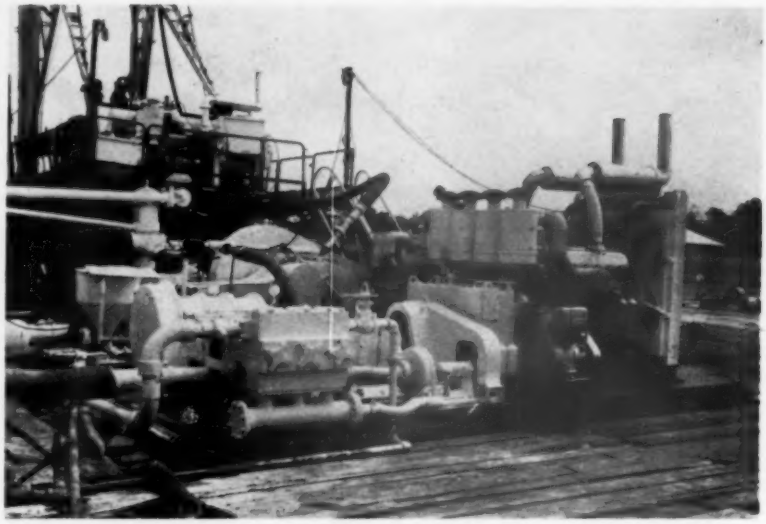
The key to the growing popularity of slim-hole drilling in the Louisiana-Mississippi area is economy, with savings of 12% to 14% being realized in comparison with standard rigs.

"In the major companies," says Rowley, "a demand for economy is being pressed home to all company personnel. Since slim holes offer economy, both in cost per foot drilled and in lower steel tonnage, it is the answer to cheaper well costs."

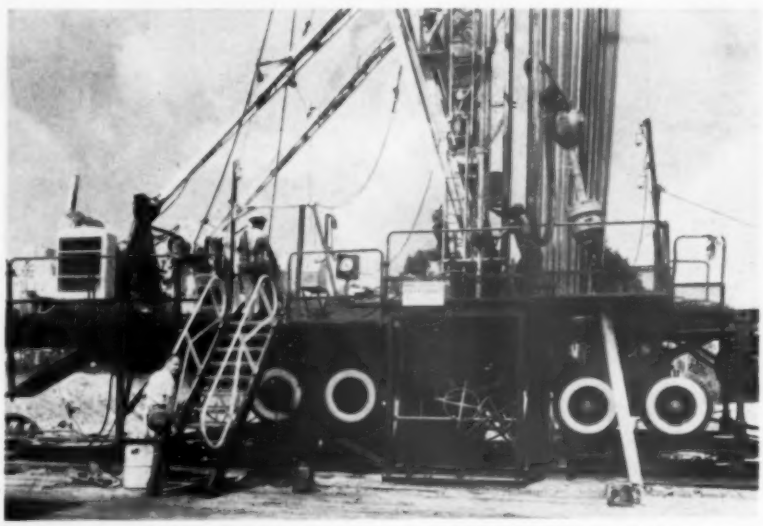
L. V. Magee, drilling superintendent for Woolf & Magee, also sees expansion of slim-hole drilling, with savings in costs to both contractor and operator as the prime factor. Magee believes slim-hole drilling will expand in all oil and gas areas.

There is some difference of opinion among contractors in the area as to what constitutes a slim hole. But there is agreement on various aspects of such drilling.

Rowley defines a slim hole as one under 7⅞ in. in diameter, or any hole not drilled with drillpipe smaller than 4½-in. Magee says a slim hole is 6⅞ in. in diameter, or smaller, with 5⅝-in. holes drilled strictly for information. Dudley Madole, drilling superintendent for Crow Drilling & Producing Co., of Shreveport, defines a slim hole as one in which 4½-in. or smaller casing is set.



OILWELL SUPER-48 Triplex high-pressure plunger pump is used to provide extra depth capability for this Rowley Drilling Co. slim-hole rig No. 11



SIDE VIEW shows rig floor and substructure for trailer-mounted Lee C. Moore mast and Brewster N-4 drawworks. The rig is on location in Marion County, Miss.

With all their differences of opinion on definition, all agree on the fact that the casing set should have a diameter no larger than 4½ in. for completion of their slim holes, regardless of the initial drillbore, so long as the bore is smaller than the 9⅝-in. standard and near the minimum size necessary for running 4½-in. casing. (But there's no agreement on what that minimum size is.)

The use of casing no bigger than 4½-in. is one of the basic factors in the economy of slim-holing. Besides reducing the tonnage of steel required to case the hole, the smaller-diameter pipe also reduces the total amount of cement required.

There also is general agreement as to equipment required.

In addition to substantial savings in capital investment, there is further saving in depreciation of slim-hole rigs, the contractors note.

They concur on the use of a light,

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low-powered rig with small-diameter drillpipe and bit, using no more rig than required to lift and turn the pipe.

The depth capability of this basic rig equipment is limited by the available pump pressure. But when this depth limit is reached, auxiliary high-pressure pumps can be coupled with the light rig to drill deeper holes.

This combining of auxiliary high-pressure plunger pumps with the lighter slim-hole rig is not followed, however, by all of the slim-holers. Rowley has four skid-mounted high-pressure pump units with their own power for use with his six slim-hole rigs. Woolf & Magee has not yet gone into the plunger-pump auxiliaries, but is looking them over.

Crow, with only one slim-hole job to its credit to date, hasn't added the auxiliary pumps yet either.

Over-all savings are boosted by reductions in transportation, labor, and materials costs.

The smaller rigs are either trailer-mounted or skid-mounted. Rowley, who has three of each, estimates that rig fuel costs and bit costs also are about 40% below those of standard-hole rigs.

He estimates that labor costs for slim-hole rigs are about 15% less than those for standard-size rigs. He uses four-man crews on his rigs, compared with the standard five-man crews, and adds that he is considering use of only three men per shift.

Another savings factor, says Rowley, is the use of 10% to 12% diesel oil and detergents in drilling mud to lubricate slim-hole sidewalls, thereby reducing the chance of stuck drillpipe, and to lubricate the drill bit, thereby increasing bit life.

Slim holes as deep as 12,000 ft. have been drilled in the area.

Woolf & Magee has drilled slim holes to 10,000 ft. and is thinking of drilling such holes to 15,000 ft.

Rowley has drilled slim holes to 12,000 ft., and can go to 13,000-14,000 ft. with two of his rigs, using auxiliary plunger pumps. He believes that future depth possibilities of slim-hole rigs are unlimited, depending only on hydraulic and metal developments.

He says slim hole limitations depend upon the area being drilled, with drilling through the Hosston (Travis Peak) formation feasible and practical for slim-holing in the Louisiana-Mississippi area.

Major company attitudes also contribute to the growth of slim-hole drilling in the area.

Pan American Petroleum Corp., which has had eight or nine slim holes drilled in Mississippi, sees slim-holing as a means to economy, particularly for exploratory work. The company, according to a spokesman, feels that slim-holing has its place in the industry, but that it isn't universally applicable.

Humble Oil & Refining Co., one of the pioneers in slim-holing, makes wide use of slim holes, utilizing them in permanent completions, in which small-diameter tubing is set as casing.

The California Co., Texaco Inc., Gulf Oil Corp., and Union Producing Co. are among others who have had slim holes drilled for them in the past few years.

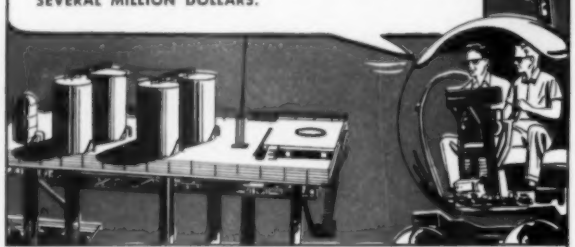
Rowley says he has met considerable resistance to slim-hole drilling in selling to the major companies, at the lower operating level. But by going to higher levels of management and letting the economy of the slim-hole sell itself, Rowley says, he has been able to gain growing acceptance.

Rowley says he welcomes the sight of other contractors going into slim-holing, not only from the standpoint of competition, which he terms a healthy thing, but also because the addition of new contractors in the slim-hole field makes his job of selling the concept of slim-hole drilling so much easier.

1.

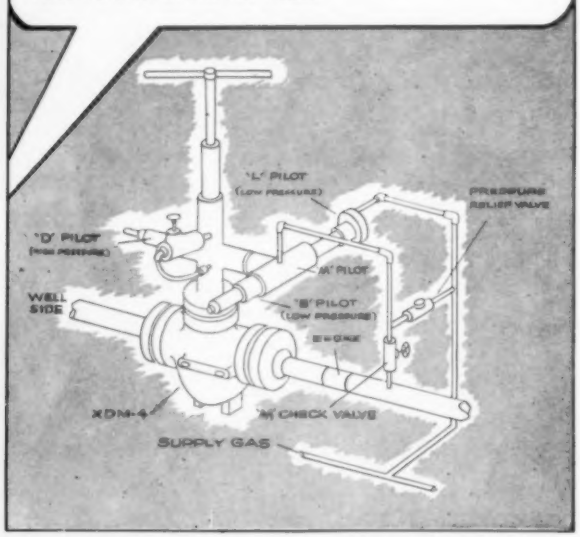
OTIS SURFACE SAFETY VALVES

— EQUIPPED WITH AUTOMATIC PILOTS — SHUT IN THE SIX WELLS ON THIS PLATFORM AND **PREVENTED A MAJOR FIRE** THAT COULD HAVE COST US SEVERAL MILLION DOLLARS.



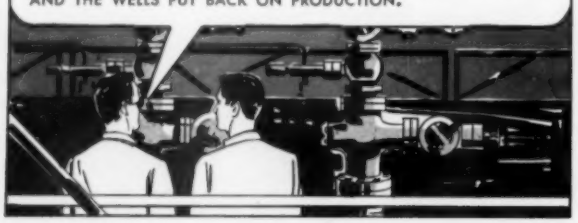
2.

HERE'S A DIAGRAM OF THE SAFETY VALVE AND AUTOMATIC PILOT INSTALLATION WE HAD ON THIS PLATFORM. EACH OF THE SIX WELLS HAD A TYPE XDM-4 OTIS SURFACE SAFETY VALVE INSTALLED BETWEEN THE WING VALVE AND THE CHOKE. THE SAFETY VALVES AND PILOTS WERE INSTALLED SO AS TO (1) SHUT IN AN INDIVIDUAL WELL SHOULD A FREEZING CONDITION EXIST IN A FLOW LINE OR CHOKE; (2) SHUT IN ALL WELLS ON THE PLATFORM SHOULD A FLOW LINE BREAK, OR (3) SHUT IN ALL WELLS ON THE PLATFORM SHOULD THE GAS SALES LINE BREAK, OR SHOULD SOMETHING HAPPEN TO ANY OF THE AUXILIARY EQUIPMENT ON THE PLATFORM. IN THIS CASE IT WAS HIGH TEMPERATURE ON A HEATER THAT ACTIVATED A TYPE L OTIS PILOT TO SHUT IN ALL THE WELLS.



3.

THE SIX WELLS WERE PRODUCING 32 M.M.C.F.D. WHEN AN EQUIPMENT FAILURE BOOSTED THE TEMPERATURE IN ONE OF THE HEATERS TO ABOUT 1,000° F. THIS SET THE PLATFORM ON FIRE. BUT WE DIDN'T LOSE OUR WELLS OR THE PLATFORM — THANKS TO THE OTIS SAFETY VALVES. WHEN OUR PUMPER GOT OUT THERE HE FOUND ALL OF THE WELLS SHUT IN, AND ONLY A SMALL FIRE BURNING, WHICH HE EXTINGUISHED. AFTER MAKING LIMITED REPAIRS, THE SAFETY VALVES AND PILOTS WERE RESET AND THE WELLS PUT BACK ON PRODUCTION.



Finish Velocity Survey in Yukon

The most northerly seismic velocity survey attempted has been completed at a drilling site 300 mi. north of Dawson, in the Yukon.

The site is as far north of Calgary, Alberta, as Brownsville, Tex., is south. It's the location of Western Mineral Corp. No. 1 Chance.

Last August, this wildcat yielded the first oil and gas in the Yukon on a drillstem test at 4,250-370 ft. in a formation tentatively identified as Permo-Pennsylvanian (PW—Aug.28 '59,p24).

No. 1 Chance, which had a projected depth of 6,000 ft. was at 5,104 ft. at last report.

Century Geophysical Corp.'s Seismic Reference Service conducted the survey, in cooperation with Schlumberger Well Surveying Corp.

Schlumberger moved in a portable logging unit and well geophones ahead of the velocity survey. The company's Sonic log was run at the same time as the survey.

Century moved in a two-man SRS crew with 670 lb. of equipment. The crew was flown from Edmonton to Dawson by commercial airline, and from there to the site by helicopter.

Powder and caps were trucked from Ft. St. John to Dawson and then flown to the site by helicopter.

Four 50-ft. shotholes, spaced on two sides of the wildcat, were drilled with portable equipment for the survey.

Water used in drilling the shotholes was heavily salted to prevent freezing, since permafrost surrounded the entire depth of the holes.

Shooting in permafrost gives much faster uphole time than is normally obtained in weathered zones. Velocities may be 4,000 to 5,000 ft. per second or more.

The future looks good for further seismic work in Canada's Arctic lands.

Seismic activity in the Yukon heretofore has been almost nonexistent.

The Canadian government's recent decision to permit waiting periods of five years for the release of seismic data, however, is expected to stimulate exploratory efforts in the next few months.

One big Texas-based independent already has plans to fly in a six-man skeleton crew with portable recording and shot-hole drilling equipment. The men and equipment will be transported by pontoon- or ski-equipped planes to the numerous lakes that are frozen almost solid in the winter.

The crews, following the same procedure established by surface parties, will set up base camps along the lake shores, with work radiating outward. These camps will be moved from lake to lake as work progresses.

Initial seismic work in the Yukon undoubtedly will be of a correlation-reconnaissance nature, followed up by detailed traverse surveys to delineate structural trends that develop.

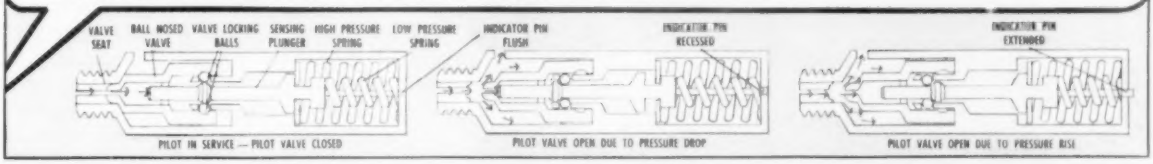
A velocity survey of the type just completed in the Yukon usually is considered the first step in any extensive seismic program.

Shooting a well establishes the variations in seismic velocities with depth by using the travel times of seismic waves from the surface to a well geophone at points down the bore hole.

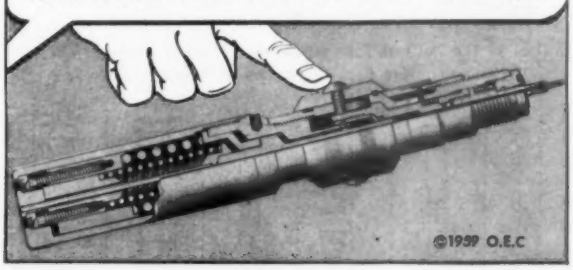
Using this information, the geologist constructs time-depth charts used in the computation of all seismograms made in the area.

An alternate method, used when no wells are available, is the shooting of several refraction profiles laid out as ideally as possible on flat surface and (it is hoped) a "normal" subsurface.

4. SPEAKING OF RESETTING PILOTS, HAVE YOU SEEN THE NEW TYPE E OTIS HI-LO PILOT? IT'S SO SIMPLE TO SET AND RESET A TEN-YEAR-OLD BOY COULD DO IT. HERE ARE THREE SCHEMATIC DIAGRAMS OF THE TYPE E, SHOWING THE PILOT IN ITS THREE OPERATING POSITIONS: SET AND READY TO OPERATE; OPENED AS A RESULT OF A PRESSURE DROP; OPENED AS A RESULT OF A PRESSURE RISE. THE NEW TYPE E PILOT HAS MANY FEATURES WE LIKE. TO LIST A FEW — IT'S QUIET. THERE'S NO LOUD POP WHEN IT OPENS. THEIR STANDARD MODEL IS RATED TO 8,000 P.S.I. AND WE CAN GET HIGHER PRESSURE RATINGS ON SPECIAL ORDER. THE TYPE E IS ADAPTABLE TO REMOTE CONTROL OR EXTERNAL CONTROL SYSTEMS USING ELECTRICITY, HYDRAULIC PRESSURE, OR MICROWAVE. YOU CAN TRIP THE PILOT MANUALLY WITHOUT ANY SPECIAL TOOLS. WE'VE FOUND THE PILOT ACCURATE TO PLUS OR MINUS 1%. IT HAS A VISUAL INDICATOR TO TELL YOU WHEN THE PILOT IS LOCKED OUT OF SERVICE, AND ANOTHER INDICATOR TO TELL YOU WHETHER THE PILOT OPERATED DUE TO A PRESSURE RISE OR DROP.



5. TO GET BACK TO RESETTING THE TYPE E OTIS HI-LO PILOT — HERE'S ALL YOU DO. AFTER THE PILOT HAS OPERATED YOU TWIST THIS RESET COLLAR TO THE RIGHT. THIS CLOSES THE PILOT AND EXPOSES A RED BAND, WHICH IS A VISUAL INDICATION THAT THE PILOT IS LOCKED OUT OF SERVICE. WHEN THE INDICATOR PIN IS FLUSH WITH THE END OF THE PILOT YOU CAN PUT THE WELL BACK ON PRODUCTION BY TWISTING THE RESET COLLAR TO THE LEFT. WE'LL BE USING A LOT OF THESE PILOTS IN THE FUTURE BECAUSE OF THEIR SIMPLICITY AND MANY ADVANTAGES.



6. THE OTIS SURFACE SAFETY VALVES AND PILOTS WE INSTALLED ON OUR PLATFORM ONLY COST $6,500. THAT'S A PRETTY SMALL INVESTMENT TO PROTECT A SEVERAL-MILLION-DOLLAR INSTALLATION. AND THIS ISN'T THE FIRST TIME OTIS SAFETY EQUIPMENT HAS SAVED US A SUBSTANTIAL LOSS. EXPERIENCE HAS TAUGHT US WE CAN RELY ON OTIS SAFETY EQUIPMENT. IF YOU HAVE **ANY UNPROTECTED WELLS** — ESPECIALLY IN ISOLATED LOCATIONS OR IN CRITICAL AREAS — I SUGGEST YOU CALL YOUR NEAREST OTIS OFFICE NOW. LET AN OTIS SAFETY VALVE EXPERT HELP YOU WORK UP THE PROPER SAFETY PROGRAM FOR YOUR WELLS—**TODAY—BEFORE YOU NEED IT.**

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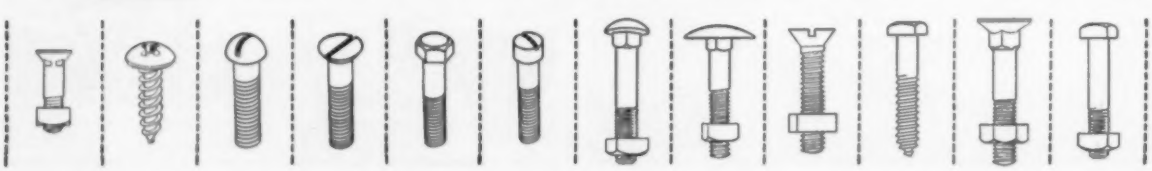

New Recovery Processes Analyzed

Concerted studies are under way as researchers try to unravel the mysteries of various miscible-phase displacement and thermal combustion processes.

New secondary recovery techniques will play an important role in future production if the continuing experimentation and study that is now being done brings the expected results.

The concerted drive in recent years to find better ways to effect secondary recovery of oil has led to development of several types of miscible-phase drives, and new approaches to thermal drives.

Though some of these methods—particularly miscible floods—are now in limited field use, many of the newer techniques are still largely experimental. In some cases, studies haven't gone beyond the laboratory stage.

The basic aim is to develop secondary recovery techniques that are superior to the conventional waterflood or gas drive. To date, however, none of the newer methods have yet been proved in the field to be generally superior to the conventional processes (PW—Dec.4'59,p16).

Results of laboratory tests of recovery methods using carbon dioxide and carbonated water, LPG and waterflood, and reverse combustion were among the reports given this week in San Francisco at the 52nd annual meeting of the American Institute of Chemical Engineers.

Solvent flooding, either with carbon dioxide followed by carbonated water, or with propane followed by methane, will yield much better recoveries than conventional methods where reservoir conditions are favorable, according to L. W. Holm, of Pure Oil Co.

In solvent flooding processes, Holm noted, a slug of solvent is injected into the reservoir and followed by a less valuable sweep fluid. LPG injection followed by natural gas is the most common hydrocarbon solvent flooding process.

Carbon dioxide is one of the non-hydrocarbon fluids now being studied in this process, he added.

Holm reported that carbon dioxide, even when not completely miscible with the reservoir oils, is highly soluble in such oils at pressures above 700 psi. Under certain conditions, the oil-displacement efficiency of CO_2 approaches that obtained with completely miscible solvents.

The carbon dioxide is also highly soluble in water at elevated pressures, so water is a satisfactory material to drive a slug of CO_2 through an oil-bearing reservoir.

"The CO_2-carbonated-water flooding process has two other attributes," said Holm. "First, it imparts a more favorable mobility ratio to the recovery mechanism, with attendant improvement in the sweep efficiency for reservoir; second, the CO_2 reacts with limestone and dolomite rock, causing an increase in permeability to the invading fluids."

Laboratory oil recoveries of from 60% to 80% of the original oil in place were obtained by these solvent-flooding processes, as compared with gas drive and waterflood recoveries of between 25% and 40% on the same cores and linear models, Holm reported.

The laboratory experiments were conducted on sandstone and dolomite cores. "These recoveries were obtained using solvent slug sizes of 10% to 30% of hydrocarbon pore volume," Holm said, with less solvent being required as the length of the flood path increased."

Less total fluid injection was required for the CO_2-carbonated-water process to obtain the increased oil recovery than was needed for the propane-methane process, he said. These same results, however, also showed that the amount of CO_2 needed would be greater than the amount of propane that is required for a given field application.

Holm said that the high oil recoveries obtained by CO_2-carbonated-water flooding, relative to the recoveries obtained by propane-gas, are believed to be due primarily to the comparatively high mobility ratio of the CO_2-carbonated-water flood.

He added that, "Improved recovery would be realized earlier in the life of a flood with CO_2 and carbonated water than with propane followed by gas."

Another laboratory study of miscible drive shows that there is usually an optimum slug size of pentane to inject ahead of a waterflood, according to a trio of researchers from the University of Oklahoma.

The three, F. W. Cole, J. V. Cowan, and M. L. Jackson, told the AIChE that this optimum size will depend on several economic factors, which must be evaluated for each reservoir under study.

Where the miscible slug cannot be recovered as a gas by lowering reservoir pressure, the ideal slug size for obtaining maximum reduction in oil saturation with a minimum amount of pentane is approximately 5% of the pore volume.

In systems where the miscible solvent can be recovered as a gas, slug size appears to be limited only by economics of handling; that is, oil recovery increases as slug size increases.

The researchers noted that many reservoirs which are potentially favorable for secondary recovery contain large amounts of free gas. The effects of varying gas saturations on recovery efficiency, they added, are of considerable importance in these cases.

Their study, said to be the first in which the effect of such gas saturation

'Con Men' Are Foiled in Ohio

The Ohio Oil & Gas Assn. has helped break up a confidence game in which state operators were being victimized.

In some cases, association warnings saved members from being "taken"; in other cases, warnings resulted in stopping payment on checks.

According to the association, the two confidence men claimed to represent extensive amounts of trust money available for use in oil and gas development. When they found an operator interested in securing additional capital, they asked for amounts of $75 and more for their services as agents to secure this capital—which was never forthcoming.

"If any member is approached with a scheme like this," the association warned, "please remember that money is tight right now—in the oil industry and all other industries."

This pipeline man wanted to know:

WILL A BELL SAVE ME MONEY?

At some point, most pipeliners take a long look at their ordinary equipment and the thought comes to mind: What about a helicopter? In the case of this Oklahoma construction company, the boss was looking, also, at a contract just signed . . one calling for a 30-inch gas line across 343 miles of mountains in Alabama, Tennessee and Kentucky.

What the company did was *charter* a Bell. From there on, discovery followed discovery. On the first day out, after spotting a broken-down bulldozer, the Bell flew in mechanics and parts for quick repair. Then it started shuttling spread-superintendents to work sites, helping engineers keep track of progress, jumping here and there to haul in a tool or bring out an ailing workman. Just its hovering presence gave the entire job the feel of being under control.

This Oklahoma company now uses a Bell on four other spreads, in such new-found ways as hunting out roads, ferrying survey crews, flying in inspectors and personnel. How about the value of a Bell in your own operation? Charter is a low-cost way to find out. We'll be glad to send you names of Charter Services in your area, along with additional information on Bell models and other convenient ways to try the Bell. Simply write Dept. 25L Bell Helicopter Corporation, Fort Worth, Texas.

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on the efficiency of miscible floods has been investigated, showed that increasing the amount of free gas decreases the flooding efficiency of a miscible drive.

In terminal air-drive experiments, on strongly water-wet sandstone cores, the trio found that flooding with air following a waterflood resulted in additional oil recovery of approximately 10%.

A theoretical analysis of heat flow in reverse combustion, one of the newest techniques of thermal recovery, showed the effect of the air injection rate on combustion zone velocity and heat loss.

V. J. Berry, Jr., and D. R. Parrish, both of Pan American Petroleum Corp., noted that reverse combustion is a method that can be used to recover hydrocarbons from porous underground formations containing oil or tar.

In applying this method, air is introduced via an injection well, and the mixture of air and hydrocarbons is ignited at the production wells. The combustion zone then moves toward the injection well, countercurrent to the air flow.

If the combustion-zone temperature is sufficiently high, they said, the oil or tar in place is distilled and cracked. The hydrocarbon flows as a vapor to the production wells and is subsequently condensed at the surface.

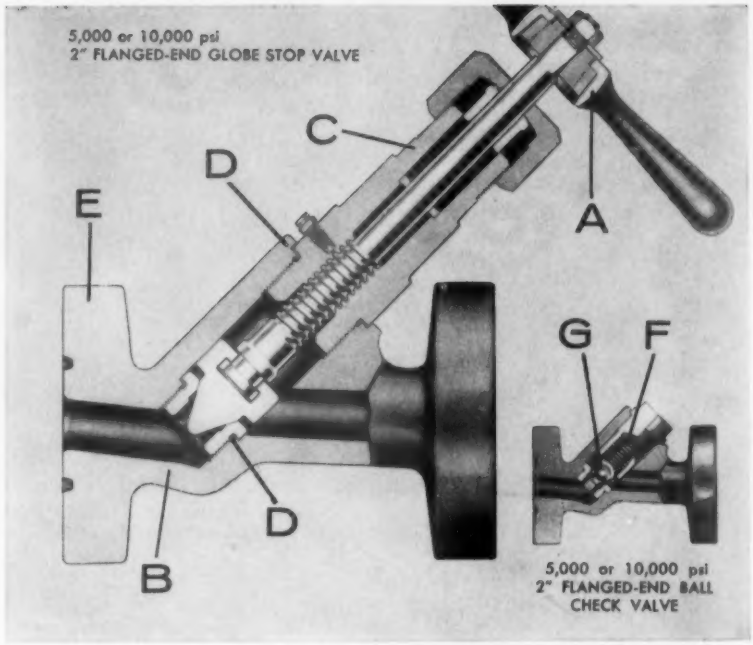
"Maximum temperature and velocity of movement are the two variables defining the progress of the combustion zone," Berry and Parrish said.

Results of their studies indicate that the maximum temperature reached and the combustion zone velocity both increase with an increase in air injection rate.

Alcohol, with A Water Chaser

A slug of alcohol may be just what the doctor ordered for recalcintrant reservoirs in this country, says R. L. Slobod, professor of petroleum and natural gas engineering at Pennsylvania State University.

Slobod says the alcohol-slug process of secondary recovery may be one solution to lifting the 150-billion bbl. of untapped domestic oil. The alcohol slug is followed by a waterflood, Slobod told last week's meeting of the Interstate Oil Compact Commission in Philadelphia.



New Edward High-pressure Valves for Petroleum Services

New high-pressure, *flanged-end* valves from Edward are designed to give you longer, more dependable service for many petroleum industry applications requiring highest quality in forged steel valves: high pressure heaters, treaters and separators, high-pressure vessel blow-down; headers and flow lines; bypass lines; unloading in compressor stations; blow-out preventer manifolds; throttling services; and many other similar petroleum industry applications.

NEW GLOBE STOP VALVES—There are two new Edward flanged-end, globe stop valves: one for pressures to 5,000 lb WOG at 300F (10,000 psi test); and one for pressure to 10,000 lb WOG at 300F (15,000 psi test). Both valves have the exclusive cross-arm style Impactor handle* (A) that makes closing against high-pressure much easier, eliminates need for "cheaters." Valve body (B) is drop forged of chromium-molybdenum alloy steel to exacting requirements for maximum ruggedness and long-life under toughest service conditions. The inclined bonnet (C) facilitates streamlining of flow passages, reduces pressure drop and wear-producing turbulence. Metal gaskets (D) and buna-N "O" rings assure tight, leak-proof fit between body and bonnet and between seat and body. Flanges (E) are forged integral with body and faced according to A.P.I. Standard 6B.

New globe stop valve Figs. 5158 and 9158

New ball check valve Figs. 5160 and 9160

NEW BALL CHECK VALVES—In the same pressure classes as the new stop valves, are two new forged-steel, ball check valves. These new check valves have the same general construction plus stainless steel spring (F) and 16% chromium stainless steel ball disk (G) for tight seating. Seat and ball disk are replaceable.

To get the complete story, plus ratings and dimensions, on new Edward flanged-end valves, write for Bulletin 584. Edward builds a complete line of cast and forged steel valves for pressures to 10,000 lbs, with flanged, screwed, socket, or butt welding ends. For additional information, see your favorite distributor, or write Edward Valves, Inc., 1236 West 145th Street, East Chicago, Indiana. Subsidiary of Rockwell Manufacturing Company. *T.M. Reg. U.S. Pat. Off.

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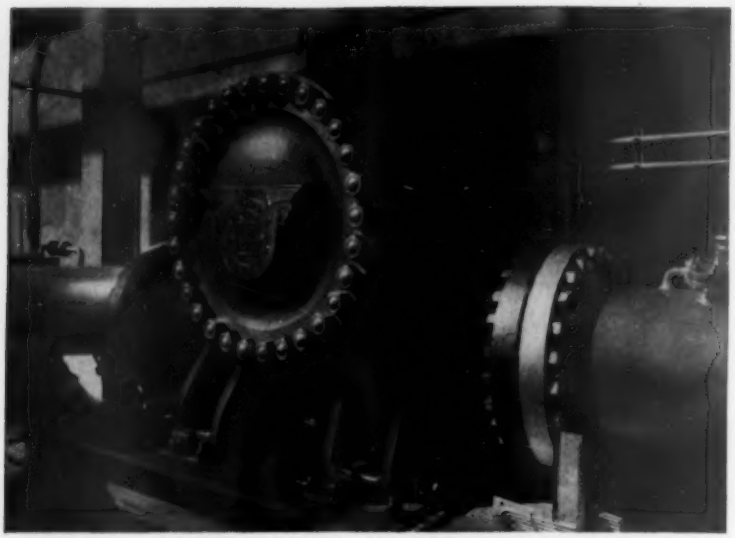

Cooper-Bessemer RFB-24 centrifugals, like this one, powered by Cooper-Bessemer LSV turbocharged gas engines, comprise the world's most efficient pipeline compressor units.

David M. Salls, *Manager, Gas Industry Sales, The Cooper-Bessemer Corporation, explains...*

How 5 Cooper-Bessemer powered, Gulf Interstate engineered stations will give Transwestern peak economy and flexibility

ALL FIVE of the mainline compressor stations of the new Transwestern Pipeline system will be equipped with Cooper-Bessemer engine-driven centrifugal compressors and will be remotely operated. These new automatic, remote-controlled stations will provide unexcelled efficiency and flexibility... a fact proven by the highly successful performance record of this modern equipment in other mainline stations of the same basic design—over 130,000 horsepower to date in mainline service.

The giant Cooper-Bessemer LSV-16 turbocharged gas engines will be of the type shown here. They will drive Cooper-Bessemer RFB-24 centrifugal boosters through speed increasers. Each of the five stations will include two of these high-efficiency compressor units. These units have the highest thermal efficiency obtainable in the gas industry today. The map shows the location of the stations. All units will be automatically controlled from a central point.

We will gladly supply details on this Cooper-

Map shows location of Transwestern's mainline automatic, remote-controlled stations. Background shows type of Cooper-Bessemer LSV-16 turbocharged engines to be used on this new line.

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ENGINE, TURBINE OR MOTOR DRIVEN

Ontario Oil, Gas Show Steady Gains

Oil and gas activity in Ontario and Lake Erie—although modest by comparison with its husky counterpart in Western Canada—continues to gain strength.

Individual well production is relatively small, ranging from 25 b/d to 100 b/d for oil wells and from a few thousand cf/d to 1-million cf/d for gas wells.

But this is offset by the very attractive factors of low cost and proximity to ready markets.

The result is that wellhead prices for both gas and oil are considerably higher than the prevailing prices in Western Canada. Ontario operators get around 45¢ per Mcf. for gas, against 6¢ to 14¢ per Mcf. in Western Canada.

And, too, there aren't any regulations governing production of wells in Ontario.

All of this serves as an incentive to operators in the area to keep enlarging their exploration efforts.

Oil reserves in Ontario amounted to 7-million bbl., and gas reserves totaled 187-billion cu. ft., at the first of this year.

Gas reserves in 1956 amounted to 148-billion cu. ft.

Ontario operators last year found 4-million bbl. of oil, making the increase for 1958 about five times higher than that for 1957.

Although oil production in Ontario dates back to 1858, Canadians say, the biggest strides have been made since 1957, when the current exploration drive began.

Southwest Ontario produced 627,000 bbl. of crude in 1957, 770,000 bbl. in 1958, and 400,000 bbl. during the first five months of this year.

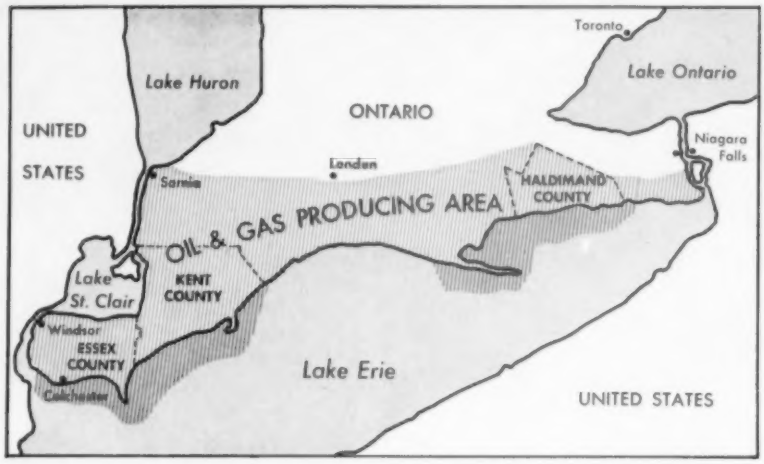
Natural gas production amounted to 14.4-billion cu. ft. in 1957 and 15.3-billion cu. ft. in 1958.

Most of the oil in the province is taken from the Devonian, while the bulk of the gas production comes from Silurian formations.

About 75% of the oil in the province comes from the Dundee (Devonian), where the formation is structurally high. Best pay zones for gas production are the Lower Salina (Upper Silurian) and Guelph (Middle Silurian).

Most of the production is found in the area south of a line drawn generally from Lake Huron across the city of London and eastward toward Niagara Falls (map).

Generally speaking, the Devonian gives way to the Silurian at about 1,000 ft. and the Silurian to the Ordovician at about 3,000 ft. The Trenton is found at around 3,500-4,500 ft., and the Basal Sands begin at about 4,500 ft.



Pay depths in Ontario range from 350 ft. to 500 ft. for Devonian oil production, and from 1,000 ft. to 2,000 ft. for Silurian oil and gas.

The almost exclusive use of cable tools results from both historical and economic influences. The longer drilling time typifying cable tool operations is not regarded as important in this area, and costs can be kept quite low.

Onshore, drilling cost to the Silurian runs between $10,000 and $12,000. Costs of completed wells in the Devonian and Silurian range between $5,000 and $18,000, depending, of course, on depth and any difficulties.

Offshore drilling costs run about 25% to 35% higher.

Severe weather conditions in the first half of this year caused drilling operations to get off to a slower start than in past years.

Just how much, if any, this will affect 1959 totals, however, won't be known for another month or so, when the yearly tally is completed.

In addition, the success ratio for the first six months of this year was down some in comparison with the same periods in 1957 and 1958.

Out of 135 attempts made during the first half of this year, only 45 were completed as producers—4 oil and 41 gas.

Despite higher costs, offshore drilling, which dates back to 1913, has been gaining momentum during the past two years.

Ontario provincial permits on Lake Erie and the very shallow Lake St. Clair are in such demand that the mid-lake international boundary lines are fast being approached.

More than 1.5-million acres of provincial permits and leases are held on Lake Erie, Lake St. Clair, and Lake Huron.

In the 15 weeks from July 1 through mid-October, 52 holes were drilled offshore, the majority being in Lake Erie off Essex and Kent Counties, at the western end of the lake, and Haldimand County, at the eastern end.

Of these 52, exactly half were completed as producers, according to the Ontario Fuel Board.

Ontario offshore drilling, in contrast to most areas, at times this summer had more wildcat ventures than development operations.

During early August, for example, 34 rigs were on wildcat locations while 28 were doing development work.

Exploratory drilling dropped off as winter approached, however, with 23 wildcat rigs active on Oct. 17. Up until freeze-up, development drilling locations remained at 27.

An oil discovery in Colchester township, at the west end of the lake, this spring attracted heavy attention, probably at the expense of drilling at the east end (PW—May29'59,p28). Imperial Oil Co. last April made an onshore Trenton completion 2,400 ft. from the shoreline, south of Windsor.

Subsequently, Place Gas & Oil moved in and completed an offshore extension ¾ mi. west for 25 b/d.

Two other attempts in the area resulted in "modest" production from one and suspension of the other.

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What's New / IN PRODUCTION

The Texas School Land Board received high bids totaling $5,860,921 on about 97,000 acres in last week's lease sale.

In addition, the Prison Land Board received high bids amounting to $195,305 for 3,979 acres on two prison farms in Brazoria County.

Highest offer at the school land sale was made by Roy M. Huffington, who bid $727,000 for a 147-acre producing tract in Dickerson field, Galveston County. He also agreed to pay a 25% royalty on the tract, on which the Pan American Petroleum Corp. lease is about to expire.

Other high bidders included:

Sun Oil, which bid $176,750 bonus plus 1/6 royalty for 700 acres in West Bay, Brazoria County.

Gulf Oil, which bid $135,780 plus 1/6 royalty for 1,102 acres offshore (within 3-mi. limit), Matagorda County.

Kewanee Oil, which bid $151,111 plus 1/6 royalty for 560 acres in Loving County, West Texas, near the Tunstill-Delaware field.

Pan American Petroleum, which bid $135,680 plus 1/6 royalty for 640 acres in the same area.

•

A 14,876-ft. string of 9⅝-in. casing—one of the longest intermediate strings ever run—has been set by Falcon Seaboard Drilling Co. in a South Louisiana test.

Gulf Oil Corp. No. 60 State Lease 1772, Timbalier Bay area, was being drilled below 15,208 ft., at last report. Projected depth is 16,000 ft.

The string of intermediate pipe also was one of the heaviest ever run. The weight indicator showed a net weight (gross weight less buoyancy provided by the mud column) of 610,000 lb. on the rigging.

The long casing string was run by Falcon's Rig No. 4, mounted on the company's inland drilling barge, the Theo. N. Law. The rig is equipped with a Bethlehem 3661 drawworks with diesel-electric power, a 650-ton traveling block, and a 700-ton crown block.

•

A pushbutton system to control gas being produced by wells over 25 mi. from shore in the Gulf of Mexico has been put into operation by Mobil Oil Co.

The system, employing microwave towers on land and offshore, is said to be one of the first and most modern of its type in offshore use.

Mobil's system stretches from its Cameron gas-distillate separation and recovery facility on the Louisiana coast to an offshore platform containing seven gas wells near Sabine Pass, Tex.

Two microwave towers, one at Cameron and the other on the offshore platform, are used to relay operating instructions from shore to equipment. Previously, such wells were controlled on the platform itself by two men quartered there.

About 5-million cf/d of gas is presently moving from the platform to the Mobil installation. The gas moves through a recently constructed 10-in. underwater pipeline.

•

A U. S. district judge in Wichita, Kan., has ruled that 144 farmers should receive compensation from 12 oil companies for actual damage to crops resulting from petroleum waste (PW—Nov.6'59,p50), but he withheld judgment on their demand for additional, punitive damages.

The farmers, representing some 300 sections of land in the eastern part of the state, much of it in the El Dorado district, said that waste dumped by petroleum operators was carried onto their lands during floods in 1951, 1953, and 1957, causing more than $3-million in crop damage.

The companies contended that the crop damage was caused by standing water.

The plaintiffs will testify individually on the amounts of their respective crop damage.

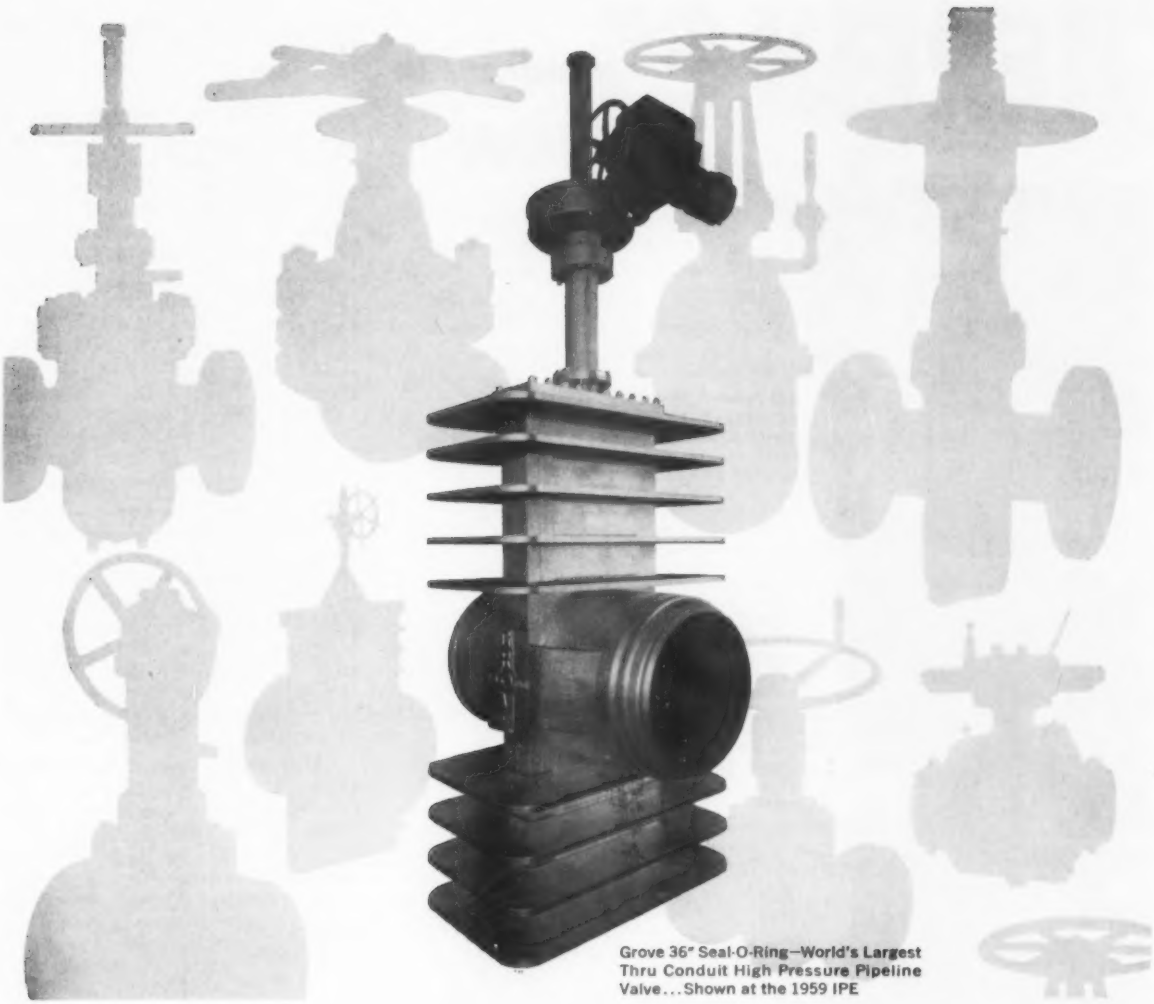
•

Feb. 15 has been set as the trial date in Austin, Tex. for five cases attacking the constitutionality of Texas' new natural gas "severance beneficiary" tax.

The suits were filed by Northern Natural Gas, Natural Gas Pipe Line of America, Panhandle Eastern Pipe Line, South Texas Natural Gas Gathering, and four others.

They are among the 269 that paid the tax under protest in September, the first month of the new levy.

The plaintiffs say the tax is an



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But, imitating a design is one thing; duplicating Grove's experience or patented construction is quite another.

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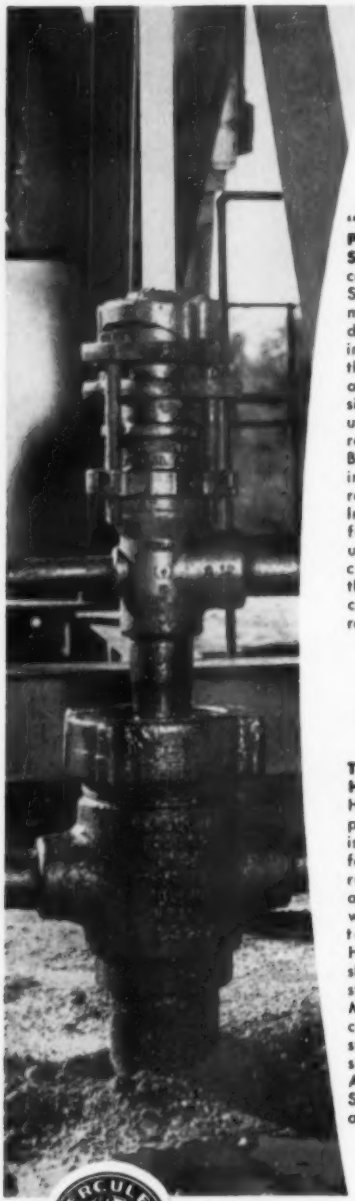
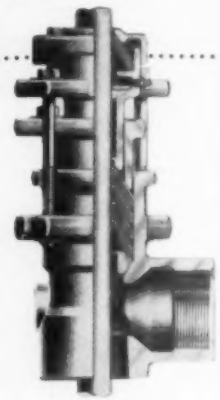


A typical set-up is shown below in Creek County, Oklahoma, using Hercules "Tee Type" Duplex Polished Rod Stuffing Box and Type "ES" Tubing Head. This is an easily assembled, effective and economical producing unit.

"TEE TYPE" DUPLEX POLISHED ROD STUFFING BOX—A combination Tee and Stuffing Box with female thread to screw directly onto the tubing, eliminating one threaded connection and resulting in a considerably shorter hookup. With internal parts removed, the Stuffing Box body is full opening and need not be removed to pull rods. In addition to being furnished in the most used sizes, special combinations of threads and outlets can be furnished on request.



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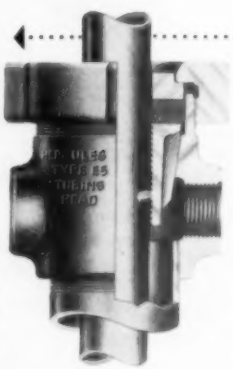

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unconstitutional barrier to interstate commerce.

•

The Interior Dept. has announced new rules changing the filing procedures on federal lands where an existing lease expires, or is canceled, relinquished, or terminated.

The new system calls for a five-day period each month during which applications may be filed for leases that became void for these reasons during the previous month.

All applications in the five-day period will be treated as if they had been filed simultaneously. Priorities will be determined by public drawing.

•

The Alberta government will offer oil and gas leases on almost 200,000 acres scattered through the province at a sale scheduled for Jan. 14.

Twelve 320-acre parcels will be offered in the hot Judy Creek area.

Acreage to be offered in the Clear Hills and Cynthia Provincial Reserves include Parcel 84—38,400 acres; Parcel 85—69,944 acres; and Parcel 86—54,960 acres.

Other parcels, amounting to about 24,000 acres, will be offered in the Carnwood, Carson Creek North, Harmattan East, Homeglen-Rimbey, Kaybob, Swan Hills, Keystone, Pembina, and Virginia Hills areas, along with Crown Reserve Parcels 1,664-1,683 totaling 6,881 acres.

•

Eastman Oil Well Survey Co. has been sold to Phillip D. Arterburn, Denver, Colo., who has served as financial advisor to the company since 1943.

The company, which specializes in directional drilling service, also manufactures rotary bits and electronic recording instruments.

H. John Eastman, founder of the company, will serve as chairman of the board, while Arterburn will be president.

•

The Texas Railroad Commission will hold a public hearing Jan. 26 on the question of relocating the boundary between the West and East Panhandle gas fields.

W. H. Taylor and Amarillo Oil Co. are both applying for boundary changes.

Taylor seeks to amend West Panhandle field rules to allow the drilling of 36 more wells on 160-acre spacing to produce according to potential factor, as do wells in East Panhandle

field, and to exempt these wells from the proration that applies to West Panhandle field.

The application "in reality" is a request to move the boundary between the two fields about 1½ mi. west, the commission said.

Amarillo Oil seeks to move the boundary east by about 6 mi. in the same area covered by the Taylor application.

In addition to the specific applications, the commisison said it will investigate "location, relocation, and possible elimination" of the boundary between the two fields to determine what action should be taken to assure orderly development and production, and to protect the rights of parties whose properties may be affected.

•

Union Oil Co. of California has acquired a 39,040-acre farmout in the Clear Hills area of Alberta from Dynamic Petroleum Products.

Union will conduct a seismic survey on the lands. If warranted, a test will then be drilled by Union to earn an undisclosed interest on the properties.

•

Texaco Inc. was high bidder, offering $23,136 for a 320-acre tract in the Ft. Sill (Okla.) Military Reservation, at last week's Bureau of Land Management lease sale.

Four bids were made, ranging from a low of $3.57 per acre to Texaco's $72.30.

•

The possibility of a second producing zone has been raised at Western Minerals No. 1 Chance, which last August uncovered the first oil and gas in the Yukon (PW—Aug.28'59, p28).

At that time, a drillstem test at 4,250-370 ft. yielded a gas flow of about 10-million cf/d of gas and an undisclosed amount of 29-gravity oil.

With respect to the second possible zone, Western Minerals will only say that "the prospects are good enough to encourage further drilling."

A spokesman says the company intends to keep drilling, because it hasn't reached all of its objectives yet. The ultimate depth, he says, "will be governed by what we find below."

The venture originally was programmed to 6,000 ft. Casing is now set to the hole's present depth of 5,104 ft. The rig being used has a depth capability of 10,000 to 12,000 ft. (page 25).

Drilling has been suspended due to lack of supplies, including mud,

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four quick facts to help clear up some confusion:

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cement, and diesel fuel. These will be replenished by tractor-train shipments during January, February, and March, with drilling expected to be resumed in February.

•

Continental Oil Co. has acquired 109 oil wells in Loco field, Stephens County, Okla., plus leases on 1,155 acres in the area.

The properties were bought from a group headed by Charles W. Scott, Duncan, Okla.

Conoco says it plans to start a secondary recovery project in the field in the near future. The 109 wells currently produce a total of about 165 b/d.

•

Drilling Highlights

California—Tidewater Oil Co. No. 86-3 KCL, section 3-31s-26e, Kern County, flowed at the rate of 700 b/d of 34-gravity oil plus 815,000 cf/d of gas through ½-in. choke on test of the Upper Stevens at 8,931-9,014 ft. The wildcat is 3½ mi. northeast of Paloma field. Tidewater plans to drill ahead to 13,000 ft.

West Texas—Chambers & Kennedy and Gulf Oil Corp. No. 1 Sealy-Smith Foundation, section 29, block A, G&MMB&A survey, Winkler County, was completed for 216 b/d of oil through 14/64-in. choke and perforations at 5,650-71 ft. in the Clearfork. The pool opened is 2½ mi. east of North Monahaans field.

In Borden County, Rowan Drilling Co. and McElroy Ranch Co. No. 1 Bertram R. Price, section 39, block 30, John H. Gibson survey, was dually completed for 552 b/d of 40.9-gravity oil through 20/64-in. choke and perforations in the Strawn at 8,238-42 ft., and for 132 b/d of 41-gravity oil through open-hole section in the Ellenburger at 8,527-36 ft. The discovery is 1½ mi. northwest of Rafter Cross field.

Colorado—Texaco Inc. No. 18 Govt.-Knowlton, section 10-4n-91w, Moffat County, flowed oil at the rate of 50 bbl. per hour on drillstem test of the Weber (Pennsylvanian) at 5,815-922 ft. Another test at 5,925-75 ft. recovered 3,420 ft. of oil, 1,025 ft. of very highly oil- and gas-cut mud, and 90 ft. of water-cut mud. The prospect is in Moffat field, which was discovered in 1923 and produces from shallower Cretaceous and Jurassic formations.

New Mexico—Blackwood & Nichols No. 58-13 Northeast Blanco Unit, section 13-31n-7w, Rio Arriba County, dual gas discovery, was completed for 2,461,000 cf/d of gas from the Dakota and for 6,270,000 cf/d of gas from the deeper Mesaverde, established producing zone in the area.

In Lea County, Sinclair Oil & Gas Co. No. 1 State-Lea 886, section 16-20s-33e, recovered 1,440 ft. of oil-cut mud and 1,385 ft. of mud-cut oil on 45-minute drillstem test of the Seven Rivers at 3,150-215 ft. The wildcat is 2 mi. east of abandoned Salt Lake field and 1½ mi. west of Teas field.

East Texas—Ralph Spence No. 1 Favors Estate, Juan Luis Chavert survey, Limestone County, flowed 4,700,000 cf/d of gas plus an unestimated amount of condensate through perforations at 7,084-97 ft. in the Travis Peak. The opener is 4 mi. northwest of Oletha gas field.

Kentucky—Walter K. Howard No. 1 R. A. Thompson, 7-H-47, Green County, was completed for 90 b/d of oil, no water, in the Corniferous (Louisville) section of the Niagaran (Middle Silurian) at 554-62 ft. The discovery is 1 mi. south of production. The pay zone is a quartz sand, unlike the dolomite and limestone in nearby pools.

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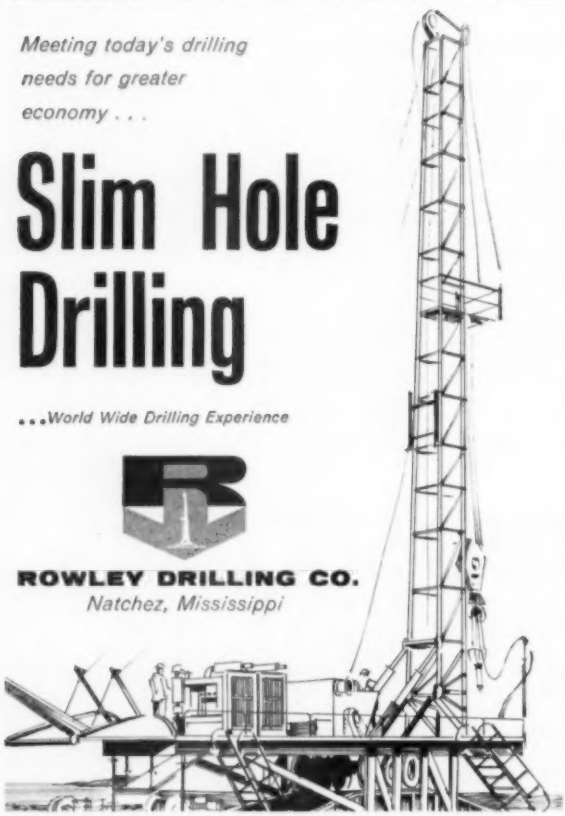

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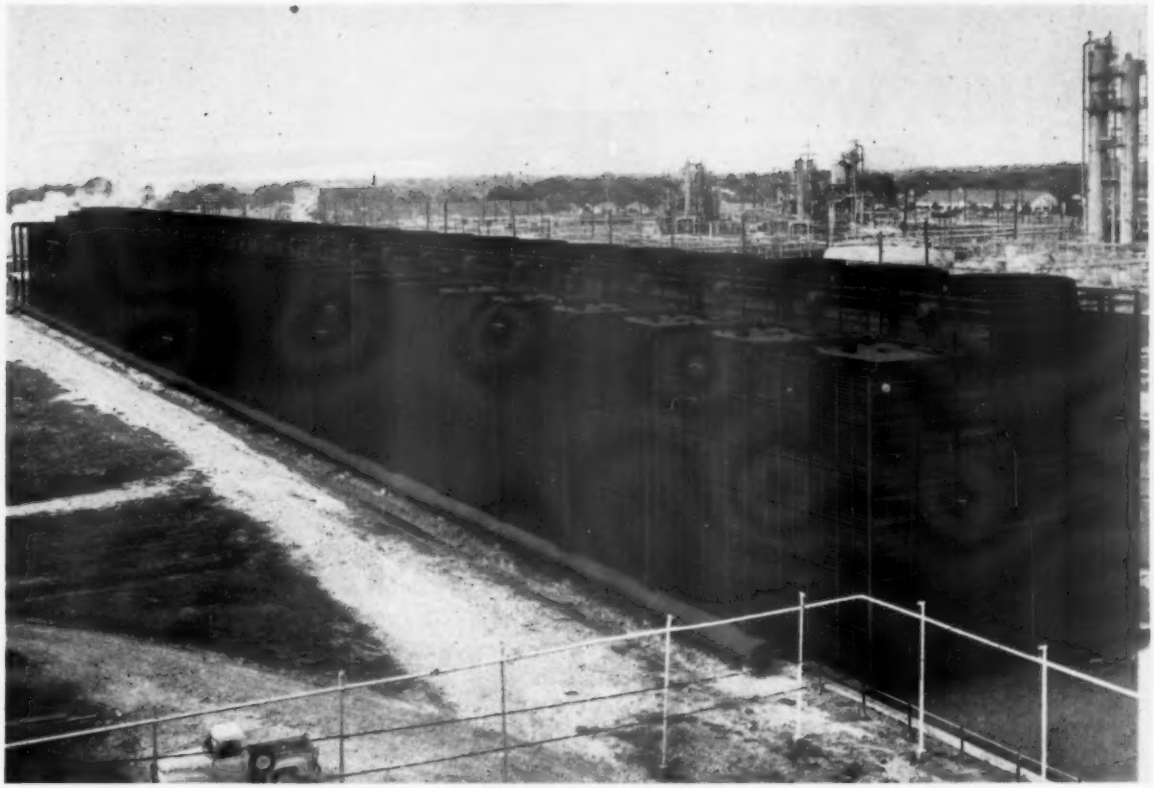

65,000 GALLON PER MINUTE HUDSON COOLING TOWER SUPPLIED IN EMERGENCY

Faced with shutdown of process units because of a damaged, partially inoperative cooling tower, a large Gulf Coast oil refiner called upon HUDSON for emergency supply of new cooling capacity. Despite necessity for modification of HUDSON standard design to conform to existing foundation, and though working under adverse condition of stepwise removal and replacement of partially operating old tower, more than 30 percent of the new HUDSON tower was operating in less than five weeks. The promised time schedule was met, the crisis averted, and guaranteed cooling performance exceeded.

Performance of such special services with speed, ability and integrity is a measure of the quality of HUDSON service — whether in repairing or replacing an operating cooling tower, or in designing and supplying a complete integrated system with balanced use of water and direct air for cooling all process streams.

In addition to water cooling towers, HUDSON designs and manufactures SOLO-AIRE units (for cooling solely with air), and COMBIN-AIRE units (for cooling with combination of maximum air and minimum water). Avail yourself of HUDSON's years of experience in integration of these all-encompassing categories of equipment into cooling systems utilizing optimum ratio of air and water balanced to best meet specific conditions of climate, process, and water availability and quality.

ONLY HUDSON OFFERS — — — — process stream cooling systems integrating cooling towers, Solo-aires and Combin-aires for optimum balance of air and water cooling.

It will pay to consult Hudson during processing design stage of new projects.

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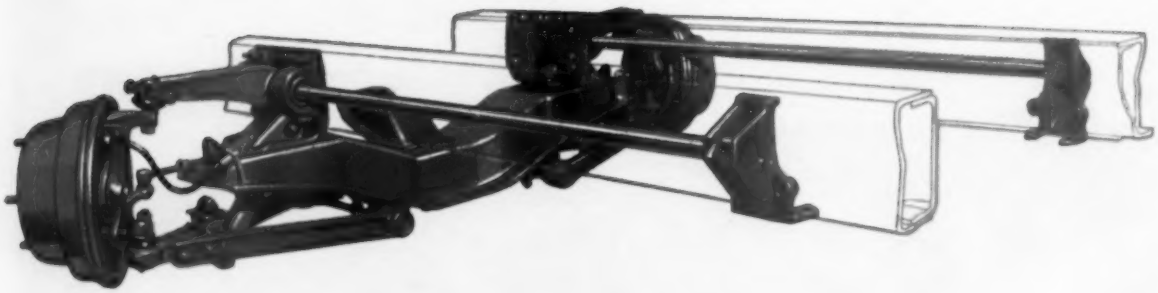


CHEVROLET'S REVOLUTIONARY TORSION-SPRING RIDE

the most significant new truck development in decades!

Years of intensive engineering achieved a revolutionary result—a totally new truck suspension system. The most exhaustive chassis engineering program in trucking history proved conclusively that, from the standpoints of both ride and durability, the finest possible truck suspension system would consist of independently suspended front wheels with torsion bar springing. Advancing on this principle, Chevrolet engineers proceeded through years of development to produce a completely new system for the 1960 Chevrolet truck product.

New Torsion-Spring Ride—how it works. The revolutionary result of Chevy's all-out engineering effort—Torsion-Spring Ride—eliminates both the old-fashioned I-beam front axle and friction-producing front leaf springs. Each front wheel, suspended independently of the other through tough control arms and low-friction linkage, is free to step cleanly over bumps without jarring the entire truck. Also, friction-free torsion bars on either side of the chassis, specially mounted to provide a twisting action, work to absorb each jolt; they flex freely to soak up all kinds of shocks, from the smallest to the most severe.

Three new rear suspensions, tough and tailored to the truck, are completely redesigned to complement the independent front suspension in every weight class.

Here's a ride that lets you get more work done in a day's time! Take a '60 Chevrolet truck over a rough stretch of back road and feel the absence of I-beam shimmy and wheel fight. Chevy's torsion springs soak up jolts and jars that would shake the headlights off an ordinary I-beam rig. You move along with maximum payloads at higher safe cruising speeds. You make off-the-highway runs in less time, improving your ton-mile-per-hour rate as much as 100%.

A ride that shows respect for the driver and the load! Out at the GM Proving Ground, the test drivers will take a torsion-spring Chevy any day over an I-beam truck—even if they have to drive it twice as far. The ride's that much better; that much safer. The load, too, has an easier time of it. There's far less bounce and jounce, less danger of damaging fragile cargoes.

A ride that adds extra thousands of miles to the truck's working life! You can be sure the shockproof action of Chevrolet torsion-spring ride means lower maintenance costs. As much as 78% of all objectionable road shock and vibration is absorbed before it can be transmitted to the truck's body and sheet metal. Chevy trucks stay new-looking a whole lot longer and their working life is increased by extra thousands of miles.

Once you've experienced the incredible smoothness of a torsion-spring ride, you'll realize that Chevrolet has set off a full-scale revolution with the introduction of its '60 models. By throwing away the old-fashioned I-beam in favor of independent front suspension, Chevy's new design has improved virtually all phases of truck performance. Drive a new one just once. That's all we ask. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

1960 CHEVROLET STURDI-BILT TRUCKS

How tough is Chevy's total newness?

Grueling, year-long torture test proves Chevrolet's do-the-job durability!

The proof is in the performance . . . and one of the most exhaustive tests in trucking history proved beyond question the stamina and staying power of Chevy's totally new suspension system and over-all design for '60.

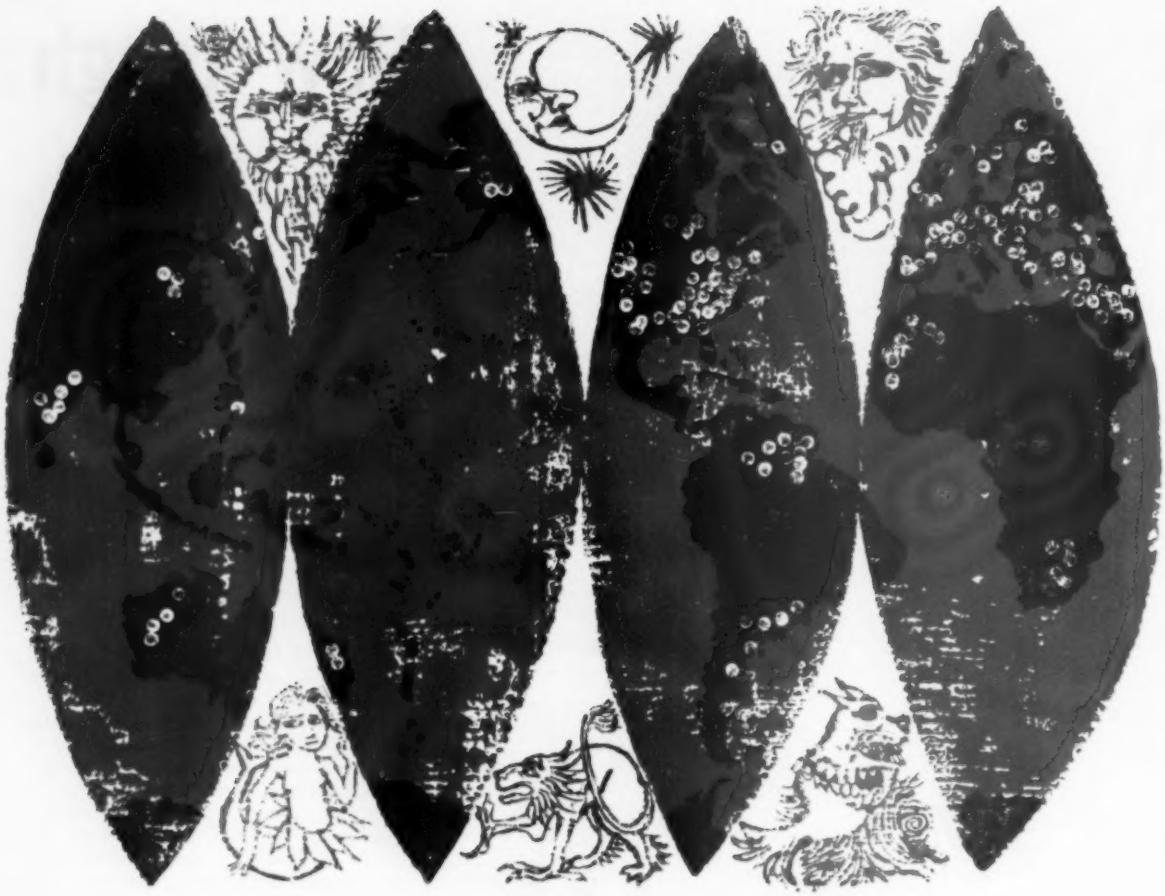
At the General Motors Proving Ground, near Detroit, a punishing 5.2-mile test course was specially laid out to exceed the most severe operating conditions found in America. Twelve months ago, a standard 1960 Chevrolet Series M70 tandem model, overloaded for testing purposes, rolled onto this truck-busting course. It has been running continually ever since!

Every lap submits both the front and rear suspension to maximum stress, rolls it over buried logs and chassis-pounding bumps of all kinds, moves the suspension system into maximum positions of twist and compression. Impacting over boulders and potholes, on the straightaway and in turns subjects the front suspension to a brutal beating seldom encountered even in off-the-road operations. To test the effects of high frequency vibration, one section of the course is over an extreme washboard surface. On every lap, each component receives maximum punishment on this twisting, turning route.

Yet, after twelve hard months, under all kinds of weather conditions, this 1960 Chevrolet is still going strong, with *no major component failures* of any kind! That's the equivalent of nine tough seasons of truck operation . . . and it's conclusive proof of the strength and durability of Chevrolet's totally new trucks for '60!

CHEVROLET

They're worth more because they work more!



805 reasons a Foster Wheeler plant fits your requirements best

Wouldn't you like to find your new plant running on its scheduled completion date, meeting all specifications, and at a cost within the construction budget? The process industries have come to expect results like these when dealing with Foster Wheeler.

Would you like to see your own process plants handled by designers, engineers and construction men who have successfully put 75 different processes into efficient commercial operation?

And, if you have decided to pioneer a new process, wouldn't you like to have the advantage of Foster Wheeler's long experience with basic processing methods, such as fluidized solids, effluent refrigeration, simplified sulfonation, and efficient heat balancing in chemical operations, etc. This unique experience—plus *procurement knowledge* gained in construction of some 805 large and small plants throughout the world, and *specialized equipment know-how* available through FW's own equipment division—works for you when you use FW design, engineering and construction services.

Get specific information by discussing your process needs and plant requirements with Foster Wheeler Corporation, 666 Fifth Avenue, New York 19, N.Y.—or write for a copy of the new fully-illustrated booklet describing FW's services.

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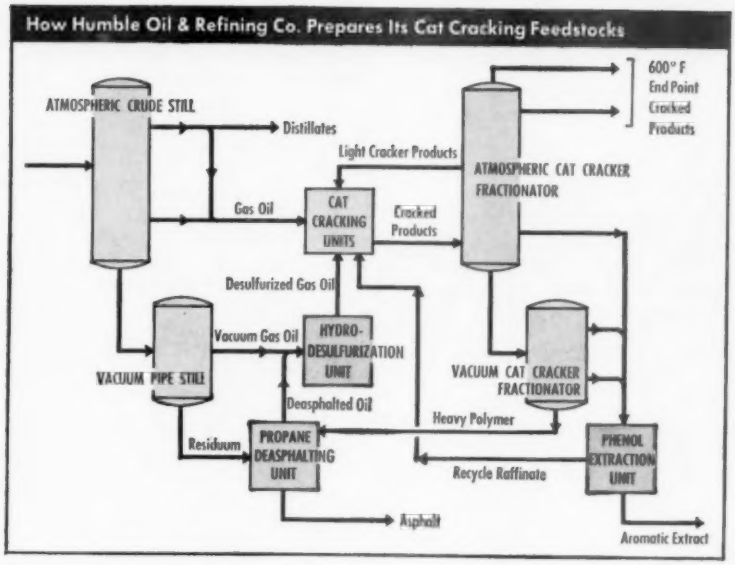
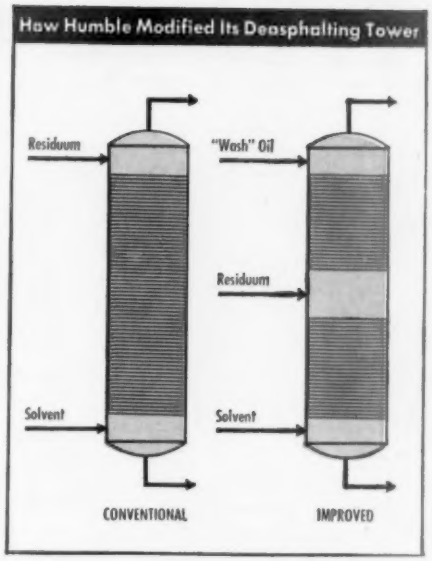


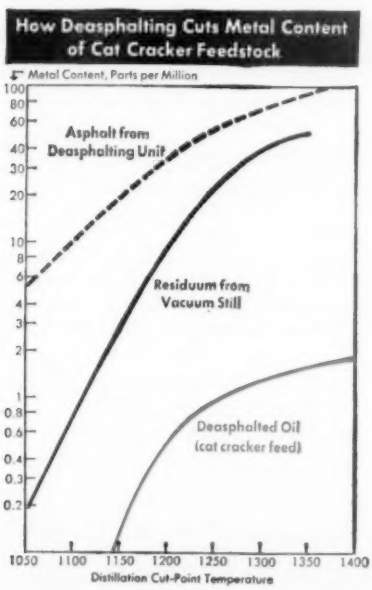


Feedstock Processing Improves Cracking

Better preparation of feedstocks is substantially improving the economics of cat cracking operations.

This fact was documented at a symposium on quality criteria for catalytic cracking stocks, at this week's annual meeting of the American Institute of Chemical Engineers in San Francisco.

Application of certain known processes—such as, for example, hydrogenation—to the upgrading of various refinery feed streams is considered by many to be the outstanding improvement in refining technology affecting the immediate future.



Humble Oil & Refining Co. has found that deasphalting and hydrodesulfurizing cat-cracker feedstocks increases the yield of premium and regular gasoline, raises the octane value, and decreases the carbon formation on the catalyst, as well as the concentration of heavy objectionable metals.

Humble's K. K. McMillin told the symposium that his company is taking advantage of every technique available to improve the qualities of the fresh and recycle feedstocks entering the catalytic cracking units at Humble's Baytown (Tex.) refinery.

This is accomplished in several consecutive steps (diagram, above).

Humble has developed a special deasphalting process to remove more thoroughly from vacuum tower residuum the metals that would otherwise poison the cracking catalysts, and substantially reduce the aromatic content of the feedstocks.

From the 240,000 b/d of crude processed at Baytown, about 30,000 b/d of residuum go to the deasphalting unit. A propane-butane mixture is used as solvent for deasphalting.

The residuum charge is fed in at about the middle of the deasphalting tower, and a "wash oil"—consisting of very-high-boiling aromatic polymers derived from vacuum distillation of heavy catalytic cycle stock—is injected near the top section (diagram, above). Due to the affinity of the aromatic phase for the metals, as much as 60% more of these metals can thus be removed than would be possible in the conventional deasphalting process.

The overhead oil from the deasphalting unit is then subjected to hydrogenation, where most of the sulfur is removed, and the oil further improved in its cat cracking characteristics.

Gas oils produced from the vacuum distillation of sour crudes, and the deasphalted oil from most crudes, are high in sulfur content. At Humble, they go to a hydrodesulfurization unit, where hydrogen from the cat reformer, having an estimated value of about 5¢ per 1,000 cu. ft., removes the sulfur and more of the heavy metals, over a pelleted cobalt catalyst. About 50,000 b/d of oil are thus treated.

In addition to the increased production of better gasoline, and the reduction of residual fuel oil yield, these improvements in the quality of the feedstocks are accompanied by a saving in maintenance and operating costs, the Humble spokesman added.

The cost of treating the cracked products has been minimized, and sulfur corrosion in subsequent processing equipment has been substantially reduced.

He also explained that, when the overhead from the deasphalting unit

goes to a hydrogenation process, the effectiveness of the deasphalter can be "pushed" further, with a greater yield of crackable overhead.

The gas oil from the cat cracker is given a phenol extraction treatment before being recycled.

The bottom products from the two cat cracker fractionators—atmospheric and vacuum—constitute the "wash oil" for the modified deasphalting unit, at Humble.

The phenol extraction process, having a capacity of 30,000 b/d, separates the highly aromatic portions, undesirable in catalytic cracking. These products, however, have a good commercial value as specialties. The raffinate, which is recycled into the cat cracker, is actually superior to virgin gas oil in its cracking characteristics, McMillin said.

Gulf Oil Co. uses a high-pressure hydrodesulfurization process to convert both atmospheric and vacuum residues to high-quality cat cracking feedstocks.

Harold Beuther and Richard A. Flinn, of Gulf Research & Development Co., told the symposium that a degree of hydrogenation much more severe than for conventional desulfurization is advisable to obtain a highly refined cracking stock. This process, which is, in fact, a hydrocracking, is carried out at pressures of from 2,000 to 3,000 psi.

It is possible, the Gulf engineers added, to eliminate completely the production of residual fuel oil with this process.

Economically, they said, this process becomes more competitive with conventional residue treatments, such as visbreaking, as the price of No. 6 fuel oil declines.

Texaco Inc. uses a furfural solvent extraction for the preparation of its cat cracking feedstocks, whether these are virgin gas oil, deasphalted oil, or recycle stock.

In the latter case, the process replaces phenol extraction.

R. R. Dickinson and C. B. Longsworth, of Texaco, described to the symposium how this process was applied successfully at Texaco's Los Angeles and Westfield (N.J.) refineries, to treat 24,000 b/d and 8,000 b/d of feedstocks, respectively.

They claimed several advantages for the furfural refining process:

- Great selectivity for the removal of the aromatic fractions, as well as the sulfur, nitrogen, carbon-producing, and metal-bearing components in the oils.
- Volatility characteristics permitting an easy recovery, by distillation, of oils boiling at temperatures above 400F.
- Good solvent capacity and low solubility of the solvent in the paraffinic raffinate. This means less solvent consumption.
- Low freezing point, which makes the process easy to use in cold weather.
- Reasonable cost and great adaptability.

Richfield Oil Corp. (L.A.) has cut down the metal contamination of its cat cracking feedstocks by increasing the fractionation rate in the crude vacuum distillation tower.

E. H. Herthel, E. H. Reynolds, and J. H. Roe, of Richfield, described to the symposium the changes in the vacuum tower tray and sidestream distribution that led to a reduction in the nickel content of the cat cracker feedstock from 1,000 ppm. to below 100 ppm.

The methods employed to apply these cat cracking feedstock improvements can lead to substantial economic differences, according to John Ditman, of Foster Wheeler Corp. He gave a description of the application of the Rotating Disc Contactor method (PW—May15'59,p137) to the propane deasphalting process.

Ditman illustrated that the addition of a propane deasphalting unit to a refinery handling 100,000 b/d of Arabian crude can improve yields as follows:

- Regular gasoline production raised from 25,617 to 26,960 b/d.
- Cracked distillates increased from 2,707 b/d to 6,636 b/d.
- No. 6 fuel oil reduced from 12,473 b/d to 6,704 b/d.

Catalyst Poisoning Monitored

The rate of production of hydrogen in a fluid cat cracking unit can be used as a reliable index of the degree of poisoning of the catalyst by metals in the feedstock, according to a study made by Sinclair Refining Co. and described this week by Earl C. Gossett, of Sinclair Research Laboratories, Inc., to the American Institute of Chemical Engineers meeting, in San Francisco.

This condition should enable the operator to follow closely the condition of his catalyst, and to take the steps necessary to maintain the metal level at its optimum value.

This makes it practical to use as cat cracker feedstock additional gas-oil recovered from heavy fuel, with relatively high concentrations of metals.

The interest of the Sinclair experiments lies in the fact that they approximate actual cat cracking operation very closely. The poisoning of the catalyst, for the tests, instead of being done by the conventional artificial means—such as impregnation of deactivated catalyst, or addition of oil-soluble metals to the feedstock—was accomplished by using normal feedstocks containing as much as 50 ppm. of nickel oxide, for the actual purpose of poisoning the catalyst for the tests.

Tests were conducted on both natural clay and synthetic catalysts, at nickel oxide levels varying from 250 to 1,500 ppm. for the former and from 70 to 800 ppm. for the latter, using a normal Mid-Continent gas-oil as feedstock.

The catalysts contained 2.5 to 3.5 times as much vanadium pentoxide as nickel oxide.

The pilot unit on which the work was performed had a 3 b/d capacity. Approximately 190 lb. of catalyst were charged in the unit, and 5 lb. of catalyst were removed, and replaced with fresh catalyst, for each barrel of feedstock that had been processed, to maintain the surface area relatively constant.

Cracking was carried on at 960F for the clay catalyst, and at 910F for the synthetic. Catalyst-to-oil ratio was held at 8 to 1.

It was found that coke and gas production increased with increasing metal poisoning, while depropanized gasoline yield decreased.

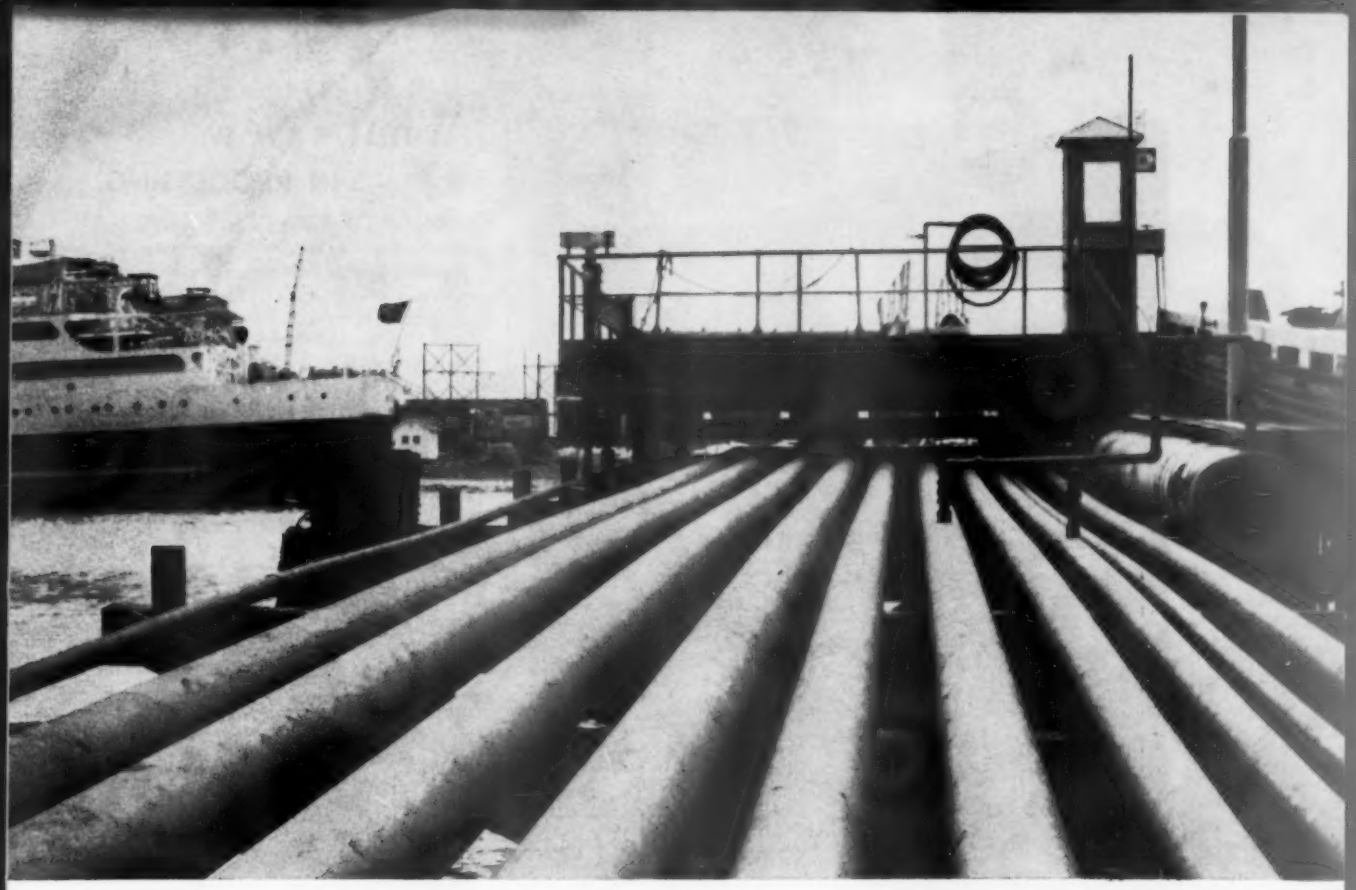
These results confirmed the data obtained in previous work.

There is a significant increase in the volume of hydrogen produced, and this makes a good criterion by which the operator can adjust his catalyst makeup rate, or select his feedstock.

Activity of both clay and synthetic catalysts decreased with increasing concentration of metals in the catalysts. Metal poisoning had no appreciable effect on gasoline octane.

While previous work on catalyst poisoning gave only qualitative information, Sinclair feels that the values obtained in these tests can be accepted quantitatively as well.

This is because the conditions of the tests, due to the method used to poison the catalyst, are very similar to normal operating conditions.



Doyle Harris, Terminal Supt. for Pontiac Refining Corp., says:

"We like both the long service life and easy application of Bitumastic coatings"

Pontiac's 45,000 bbl/day refinery at Corpus Christi, Texas ships much of its finished product from deep-water loading facilities, completed in 1953, which can handle 15-20 tankers a month.

Terminal superintendent Doyle Harris has the responsibility for maintenance of these docking facilities and the miles of pipeline leading to them. And, as Mr. Harris puts it, "These dock lines take a beating. Salt spray and actual immersion during storms cause severe corrosive attack on the steel."

Before deciding on a standard coating system for these lines, Mr. Harris conducted an "on-the-job" test of various coatings. The Bitumastic system tested consisted of one hand-brushed coat of Bitumastic No. 50 with a second coat of Bitumastic No. 28, specially formulated for outdoor exposure, applied in the same way. "The combination of these two Bitumastic coatings increased coating system life on these lines 100%," says Mr. Harris, "and application is so simple, we can use unskilled labor to do the work." Pontiac uses these coatings elsewhere, too, for protection of tank roofs and lines in both terminal and refinery areas.

Bitumastic coal-tar based coatings can give you long-lasting protection for plant and equipment. There are seven individual Bitumastic coatings to choose from so you get the one *best* solution to any particular corrosion problem. Call your Bitumastic distributor for more information, or use the coupon below. Koppers Company, Inc., Tar Products Division, Pittsburgh 19, Pa. District Offices: Boston, Chicago, Los Angeles, Pittsburgh, New York and Woodward, (Birmingham) Alabama. In Canada: Koppers Products, Ltd., Toronto, Ontario.

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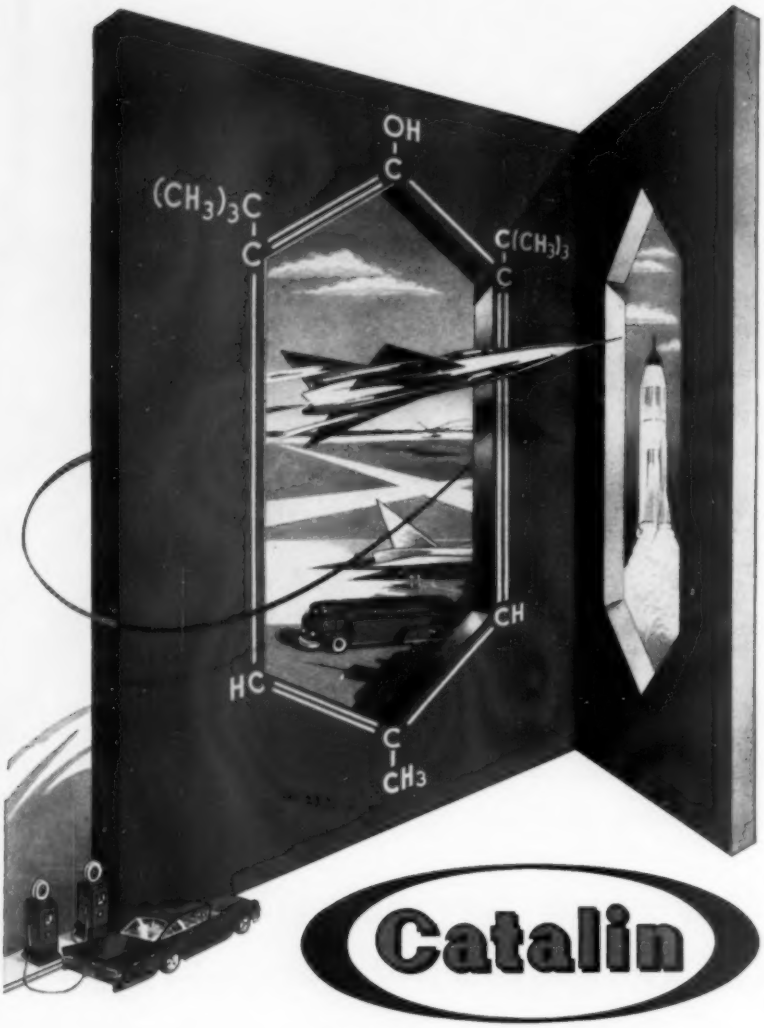

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What's New

IN PROCESSING

Signal Oil & Gas Co. is studying plans for "extensive" expansion of Eastern States Petroleum & Chemical Corp.'s Houston (Tex.) facilities.

Signal acquired Eastern States in an $8.5-million stock exchange this fall (PW—Sep.11'59,p18).

S. B. Mosher, Signal's board chairman, says that no starting date for the expansion has been set, but "we are planning for a substantial outlay of millions over several years."

Throughput of the 60,000 b/d refinery will be increased, and units installed to upgrade products, he says.

•

SunOlin Chemical Co. will build a $15-million ethylene plant at North Claymont, Del., the site of its $8-million urea plant now under construction (PW—Jul.23'59,p28).

SunOlin, joint subsidiary of Sun Oil Co. and Olin Mathieson Chemical Corp., will use dry gas from Sun's Marcus Hook (Pa.) refinery to produce 200-million lb. of ethylene a year.

Part of the ethylene will be converted into ethylene oxide and glycol to meet growing East Coast demand for these products.

•

Urea makes an excellent dewaxing agent for lowering the pour point of middle and heavy distillates.

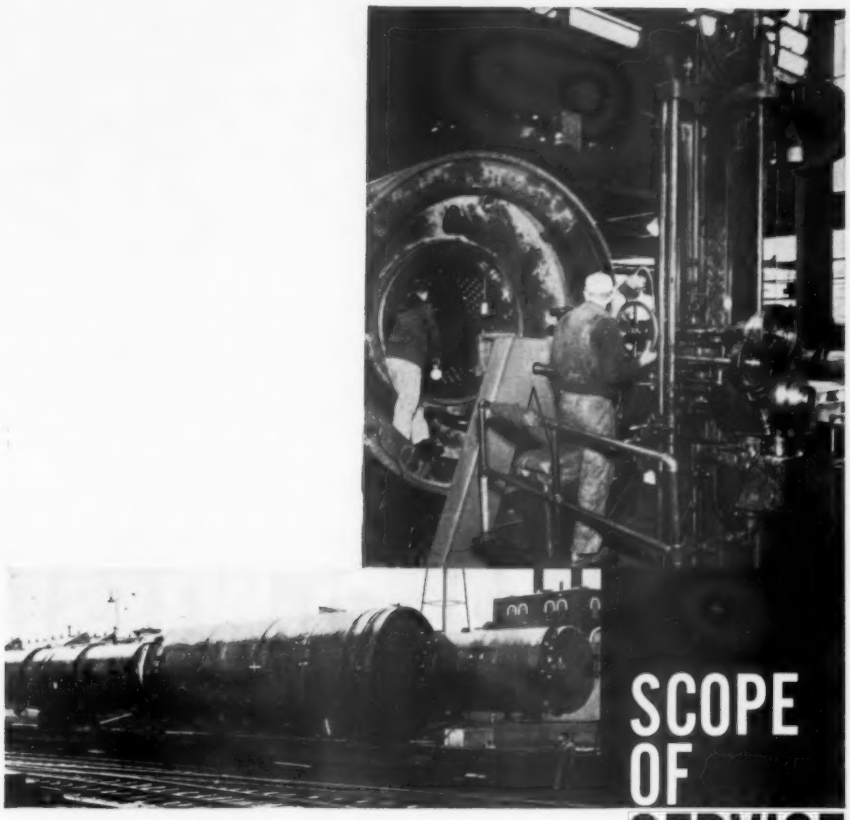
Advantages of urea extraction processes were discussed in a paper presented before the Institute of Petroleum in London last week by J. Marechal and P. de Radzitzky, of Petrofina's research group, in Brussels.

The basis of the process consists in the selective absorption of straight-chain components in a mixture of hydrocarbons. Experiments showed that when the resulting stable crystalline complex was separated by filtration, the pour point of the remaining hydrocarbon mixture was substantially lowered.

•

Ethyl Corp. is increasing commercial output of alkyl aluminum compounds at its Orangeburg (S. C.) plant.

The plant, in operation since October, produces a complete line of aluminum alkyls and alkyl aluminum halides, used principally as catalysts for the polymerization of olefins.



SCOPE OF SERVICE

For 43 years the facilities of this large and well-equipped plant for ship and engine building have been employed in building special equipment for oil refineries and chemical plants.

This equipment varies from small tanks to large Fractionating Towers, Stills, Pressure Vessels, Special Machinery, Plate Work, etc. Carbon or alloy steel-annealed and X-rayed.

THE PLANT—Our plant consists of such a variety of shops and machinery that it is unnecessary to sublet when building the type of equipment here listed. The plant consists of:

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Coppersmith Shop	Stainless Shop

RAIL OR WATER SHIPMENT—Our plant, located on the Delaware River with piers and deep water to care for sea-going ships, has railroad connections to all points.

We have adequate facilities to handle our work in all its phases and do not have to sublet.

Further information, estimates or proposals on request.

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You get quality you can measure when you specify FARROWTESTED® Republic ELECTRUNITE® Heat Exchanger Tubes.

FARROWTEST is exclusive with Republic. FARROWTESTED tubes must pass the most searching test of all, a non-destructive eddy-current test that probes for and detects injurious defects.

The "magic-eye" of FARROWTEST looks deep within the tube wall, is calibrated to reject tube with defects as shown at the table, below. Defects larger than shown in the table may pass ordinary internal pressure tests, but will not pass FARROWTEST!

FARROWTEST is offered as an alternative to other less positive tests at no increase in price. Carbon steels are produced to ASTM specification A-214; stainless steels to A-249. Both specifications include eddy-current requirements.

Get *quality you can measure.* Specify Republic ELECTRUNITE Heat Exchanger Tubes — FARROWTESTED for your protection. Get the facts firsthand. Call your Republic representative, or write direct.

FARROWTEST REJECT TABLE

Wall Thickness (B.W. Gage)	Minor dimension of the defect (Length or Depth)	Defective Area (Length, Depth Plane)
20	.006"	.0025 sq. inches
18	.006"	.003 sq. inches
16	12½% of wall	.003 sq. inches
14 and 13	12½% of wall	.004 sq. inches
12 and heavier	12½% of wall	.005 sq. inches

FARROWTEST detects and rejects not only tubing containing defects which completely penetrate the wall; but also tubing with defects equal to, or greater than, those shown in this table. For irregular defect shapes, a tube with defect area equal to or greater than shown above is rejectable. Where required, sensitivity of FARROWTEST equipment can be calibrated to reject defects of lesser specified area than shown in table, at extra cost.

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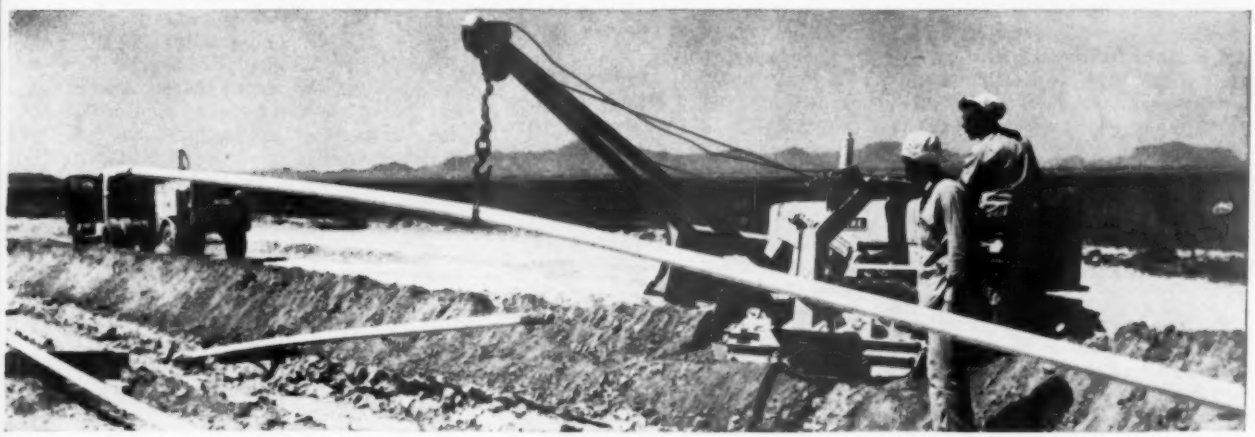
REPUBLIC ELECTRUNITE GROOVED-END TUBING solves fluid handling problems, saves installation time, cuts operating costs. Joining is quick and easy. No threads to cut, no welds to make. The mill formed grooved-end combines with a variety of available fittings and couplings to make up a piping system in minutes. Lightweight portable grooving tools are available for field forming grooves on field-cut tubing. Write for additional data.

SPECIFY REPUBLIC X-TRU-COAT plastic-coated steel pipe to seal out corrosion permanently. Arizona Public Service Company, Phoenix, is using 110.7 miles of this polyethylene-coated pipe in a project designed around company-owned and serviced pump driving equipment. This tough flexible coating wards off electrolytic action, is immune to the most severe acid and alkaline soil, stands up under the abuse of shipping, loading, trucking, handling. Write today.

REPUBLIC STEEL CONTAINERS protect your product. Republic manufactures a full line of steel containers to help you extend control of your product from shipping floor to the point of use. Through proper selection, you can be sure that product quality, as received, will provide maximum customer satisfaction and profitable repeat business. For more information, send for full line catalog.



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☐ Carbon, or ☐ Stainless ☐ FARROWTEST
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City_____ Zone____ State_____

Ship Safety Program Set for Delaware

- **Single-channel, ship-to-ship radiotelephones to be used soon as added safeguards against collisions.**
- **Federal Communications Commission assigns frequency and authorizes 20-month trial operation.**

An additional safeguard against ship collisions—single-channel, ship-to-ship radiotelephones—will go into trial use in the Delaware River shortly under long-sought Federal Communications Commission approval.

The need for navigational aids to supplement radar has been sharply underscored in recent years by several collisions of radar-equipped vessels, with heavy loss of life and property.

In 1951, 1952, and 1953, there were 31 collisions and 27 groundings in the Delaware River and Bay alone, with loss of 27 lives and $12-million in property.

In 1957, the USNS Mission San Francisco sank there after colliding with a cargo ship, killing ten crewmen.

In that year, shipping and port interests began to press as a group for FCC authorization of a single channel for exclusive use by bridge-to-bridge telephones.

FCC denied the petition at the time. Stumbling block: Major rules revision would have been needed. This summer, however, FCC, unable to offer an alternate solution, granted the petition.

Sharpest spur for swift adoption of the new safety setup has been provided by oil companies with Delaware River refineries, which are heavily dependent on tanker-transported crude.

Companies with refineries in the area (map) are: Atlantic Refining Co., Sun Oil Co., Tidewater Oil Co., Gulf Oil Corp., Sinclair Oil Co., Socony Mobil Oil Co., and Texaco Inc. Total throughput capacity is estimated at 940,000 b/d.

Though Cities Service Co. has no refinery in the area, it has a big products terminal on Petty Island, in the bay. Its tankers also carry crude on charter to other refineries.

Along with the oil companies, the American Petroleum Institute is also advocating use of the new aids.

Many other interests have joined in pushing the use of radiotelephones. Among them are the National Bulk Carriers, Military Sea Transportation Service, Pilot's Assn. for the Delaware Bay & River, Pacific American Steamship Assn., and Esso Shipping Co.

Spokesman for the various advocates of the new navigational aids is the Joint Executive Committee for the Improvement & Development of the Philadelphia Port Area.

Harry G. Schad, Atlantic's vice-president and general manager of transportation, is chairman of the committee. As chairman, he has been the leading advocate of the ship-to-ship setup.

The radiotelephones will provide direct, uninterrupted ship-to-ship communication within a 10-mi. range to enable ships to pinpoint each other's location.

Main advantage of the radiotelephones is that one channel will be open at all times for their use, with no possibility of interference from other systems that may have beamed in on the Delaware.

"By its very nature and limited range, it eliminates interference and holds solid contact in its area, thus providing uninterrupted communication," says one advocate.

The radiotelephones will operate within the 156-megacycle maritime band, at a frequency of 156.7 megacycles.

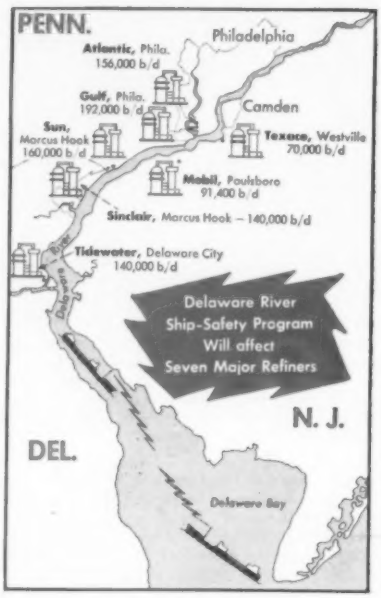
As assigned by FCC, the frequency will be available in all areas to: commercial vessels, government vessels, other craft upon showing need, bridge- and lock-control headquarters, and shore-based control stations which show need.

Authorized uses include exchanges of information pertinent to passages of vessels, emergencies, and brief test transmissions.

Units installed on a ship cost between $500 to $600. Portable sets cost in the neighborhood of $400 (PW—Jan.10'58,p44).

Delaware River pilots will start using their own radiotelephones on all ships coming into the port as soon as FCC grants licenses under its blanket approval of a petition by the Joint Executive Committee.

The sets should be in operation



shortly after Jan. 1, according to a committee spokesman.

"For ships that do not have radiotelephones on board, every pilot in the Delaware will be equipped with one," he says.

But he's quick to add that the committee would like every shipowner to outfit his own vessels, as soon as possible.

Delaware pilots meet ships about 5 to 10 mi. out in the Atlantic Ocean to guide them to upriver ports. The going is hazardous. Here's why:

- The port ranks second only to New York City in annual ship traffic, with 700 passages a day.
- Its channel is narrow, and too shallow in places for loaded supertankers.
- Ships using the port—notably tankers—keep growing in size.

Atlantic Refining Co.—generally acknowledged among Delaware oil companies to have been the leader of the project—already has 16 radiotelephones, which it's now installing on its tankers.

Installation should be finished before Jan. 1, says Schad.

Four other oil companies are swiftly following Atlantic's lead.

Sun Oil reportedly has a license application pending before FCC.

Tidewater says that it's only waiting now to decide what type of radiotelephone to buy before applying.

Socony says that it will buy two radiotelephones soon after Jan. 1 for two of its tankers, whose masters do their own piloting. On its other tankers, it will allow Delaware pilots to use their own sets.

Cities Service says that it will "make the radiotelephones available" to all of its ships using the Delaware, but doesn't say when.

Gulf and Sinclair, both of which support the program, say they will allow pilots to bring sets aboard their ships.

Before they invest in equipment of their own, however, they want to see whether the radiotelephones actually do increase ship safety in the Delaware.

Texaco flatly declines to comment on either the program or the status of its participation in it.

Though the tide of opinion is running high in favor of the new safety aids, there's a slight undercurrent of pessimism as to their ultimate overall value.

Opinion runs from glowing to cautious:

Kyran Curley, Tidewater marine engineer: "I think it's a wonderful idea and will spread to every port in the U.S. and the world."

Harry G. Schad, speaking as chairman of the Joint Executive Committee: "We believe that these [past Delaware River] collisions might have been avoided through the utilization of the VHF bridge-to-bridge radiotelephone system."

Sen. Warren Magnuson (D., Wash.), chairman of the Senate Committee on Interstate & Foreign Commerce: "This program would seem to represent a long step forward in the field of navigational safety."

Capt. Walter R. Matson, Socony's marine superintendent: "On the whole, the project is good. Within the range of the radiotelephones, ships can keep each other apprised of their locations. The project has many advantages."

Wendell N. Damonte, Sinclair's vice-president in charge of marine operations: "We're 100% for it. But what about language barriers, and the fact that not all ships will have the equipment?"

Capt. Harold F. Craven, Gulf's superintendent of marine operations: "We believe they have a tremendous safety potential and merit—but there are some possible complications we'd like to feel out."

Users of the new system have about 20 months to prove the worth of the radiotelephones in boosting ship safety.

Licenses now being issued by FCC will expire Apr. 1, 1960.

At that time, if the trial hasn't been completed, FCC will issue further licenses for a year's duration, according to the Joint Executive Committee.

Proponents of the new safety aid would like to see the radiotelephones used in ports throughout the U.S. and the world.

Actually, the single-channel, ship-to-ship radiotelephone isn't a new device, though it's use has been very limited.

The equipment has been used successfully on the Great Lakes for several years, as well as in certain European ports.

"They could sure use them in the Houston ship channel and in the Chesapeake Delaware Canal," says one Tidewater spokesman.

Before the radiotelephones could be used on an international scale, their frequency would have to get international agreement.

Basically, however, spread of their use in both the U.S. and the world will depend on their performance in the Delaware.

What's New / IN PIPELINES

Canada's new National Energy Board will open hearings Jan. 5 on major expansion projects of five natural gas transmission companies, which would boost exports to the U. S. by 857-million cf/d.

The companies are Trans-Canada Pipe Lines, Ltd.; Alberta & Southern Gas Co.; Alberta Natural Gas Co.; West Coast Transmission Co., Ltd.; and Canadian Montana Pipe Line Co.

Trans-Canada is seeking authority to build a 30-in. line from near Winnipeg, Manitoba, to Emerson, near the U. S. border, to export 204-million cf/d to Midwestern Gas Transmission Co.

The other four companies want permission to sell 654-million cf/d to Pacific Northwest Pipe Line Co. and Pacific Gas Transmission Co. The gas would be shipped through a 1,404-mi. pipeline from west-central Alberta to San Francisco, to be built at an estimated cost of $338-million.

The application by the two U. S. Pacific firms for permission to build the U. S. stretch of the line is still pending before the Federal Power Commission.

The Energy Board expects to complete the hearings in two weeks, and to reach decisions within six weeks.

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Products are now moving through Buckeye Pipe Line Co.'s newly completed pipeline from Wayne to Flint and Owosso, Mich.

Throughput capacity of the 115-mi., 8-in. line is 22,000 b/d. Cost was about $3.8-million.

Through connections with existing lines, the new line will provide an outlet to central Michigan markets for refineries of Aurora Gasoline Co. and Socony Mobil Oil Co. at Detroit, and Sun Oil Co. at Toledo.

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Texas Illinois Natural Gas Co. has been authorized by the Federal Power Commission to spend $4,149,000 for a 10-mi. pipeline and new compressor facilities in Hidalgo and Starr counties, Tex.

The new facilities will increase Texas Illinois' pipeline capacity by about 20-million cf/d.

In the same authorization, FPC approved construction of a 108-mi. gathering system in Hidalgo County by South Texas Natural Gas Gathering Co. The new line will boost delivery capacity of South Texas's system by 30-million cf/d, part of which will go to Texas Illinois.

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Crude and products shipped in domestic transportation totaled 1,017,-179,215 tons in 1958, with pipelines leading all other types of transportation in tonnage carried for the 21st consecutive year.

Total tonnage transported dropped 2,674,947 from the previous year.

Pipelines accounted for 42.57% of total crude and products transported; water carriers, 29.36%; trucks, 24.78%; and railroads, 3.29%.

In total crude and products transported, pipelines showed a slight loss as compared with 1957, when their share was 43.25%. Trucks registered a slight gain.

In movement of crude, pipelines carried 76.36% of the 402,173,215 tons transported. Of 615,006,000 tons of products transported, pipelines moved 20.48%.

Third Libya Line Planned

A third American oil group—Conorada—is already making tentative plans for a pipeline outlet for its rapidly growing Libyan oil discoveries.

The Conorada group, which includes Continental Oil, Ohio Oil, and Amerada, has already developed potential Libyan reserves of around 1-billion bbl., according to a special study by the investment firm of Chace, Whiteside & Winslow.

The group has found production over some 600 sq. mi. on its block 32, in Central Libya. In addition, it also has indications of oil on block 26, while its block 59 offsets both Jersey Standard's big Zelten discovery and Caltex's Beda discovery.

Oasis Oil, an Ohio Oil affiliate, is operator for the group.

The Conorada pipeline, according to present plans, would be started in 1961, and completed in 1963, if reserves appear adequate to support crude deliveries of 150,000 b/d.

To start with, part of this crude would be expected to flow to the U. S., or to be swapped for Venezuelan crude shipped to the U.S., under the import quotas of Continental and Ohio (Amerada has no import quota). Continental's current quota is 23,400 b/d, and Ohio's is 14,200 b/d.

Continental is also eyeing foreign markets, and recently hired several foreign marketing experts to wrestle with this problem.

Jersey Standard and Caltex have already slated pipeline outlets for their new Libyan strikes.

Jersey's engineering studies are already well under way. M. J. Rathbone, company president, recently revealed that the 100-mi. line from the company's Zelten field would have a 30-in. diameter. Initial capacity will be 200,000 b/d, and eventual capacity 500,000 b/d with additional pump stations.

Caltex also has an engineering party looking at possible pipeline routes from the Beda discovery of its affiliate, Amoseas.

Meanwhile, the Conorada group is pushing up its Libyan exploration expenditures to $44-million for 1960 alone in an effort to speed evaluation of its acreage.

This is considerably more than the $34-million the group spent in Libya from the time it started operating there, in 1955, through August, 1959.

At the start of this year, the group had four seismic crews working. By next January it will have 13. It will also have 13 drilling rigs in operation by January, against 2 a year earlier.

Actually, the group's latest discovery, brought in last week, turned out to be its biggest to date.

The F-2-32, the seventh success out of nine tries in central Libya, flowed at the rate of 2,800 b/d of 43-gravity oil from perforations at 3,086-150 ft. and 3,160-80 ft. The producing horizon is middle Paleocene, same as the earlier tests.

The new find is 3 mi. southeast of the Dahra discovery. That well, the best previous test, flowed at the rate of 800 b/d. The group is now drilling four other tests on the block.

Meanwhile, Mobil Oil is attempting to extend the Conorada finds eastward to its block 11.

Mobil's third wildcat on that block 11, which was spudded last week, is only 4 mi. east of the nearest Conorada find, and 30 mi. from the Dahra discovery. Mobil's first two tests on the block were dry holes.

Sahara Oil Priority in Europe

PARIS—France last week officially disclosed its plan to get priorities for its Sahara crude in the European Common Market.

The plan was revealed by Minister of Industry Jean-Marcel Jeanneney as a prelude to formal inauguration by Prime Minister Michel Debre of the Sahara-Mediterranean pipeline.

The plan, which France claims should not cause a price rise, calls for the six nations to set a common tariff on imported products or products made from imported crude—with certain exemptions:

- Products made from Sahara and European crudes would be exempt.
- There would also be an exemption for a quantity of refined products from other sources. This would amount to slightly more than the portion of demand in the six Common Market countries that is not covered by European and Sahara products. This provision, it is claimed, would keep Sahara oil prices in line with those from other sources.

The scheme, to be officially discussed this week, had reportedly been received coolly by the governments of the other Common Market countries when proposed by France.

It is now to be discussed by the Council of Ministers of the three European Communities—the Common Market, the Coal & Steel Community, and Euratom. The same countries are participants in all three: France, West Germany, Italy, The Netherlands, Belgium, and Luxembourg.

France's Industry Minister last week also disclosed some details of his plan for coordinating France's own energy production.

It includes closing of marginal coal mines and setting up a reconversion agency with a $30-million budget, to come either from the government or from a new tax on fuel oil.

Mattei's Next Target: Britain

LONDON—Enrico Mattei, expansion-minded head of Italy's state-owned ENI, came to London again last week to push plans to break into refining and marketing in Britain (PW—Sep.18'59,p20).

Mattei had visited here in September to seek financing for a refinery and chain of gas stations in Britain—a market largely in the hands of long-established international majors.

Mattei proposes setting up a chain of motels combined with gas stations, with the motels to be built in partnership with Forte's, Ltd., a British catering firm.

Publicly, Mattei would say only that the gas station project is "progressing steadily." The motel plan was described by restaurateur Charles Forte as still too vague for comment.

It's believed in London that the gas station venture may get under way in a few months. If so, it will mark the latest of many new foreign ventures Mattei has been breaking into in a drive to establish ENI as a full-scale international oil operation.

U.S. Equipment Makers Race to Mexico

(From PETROLEUM WEEK's *Mexico City Bureau)*

MEXICO CITY—A virtually unpublicized race by U. S. oil equipment manufacturers to get into local production in Mexico has been gaining momentum in the past six months.

At least 15 U. S. firms are now on the fast-swelling list, according to a PETROLEUM WEEK check in Mexico City last week. Some have built or leased plants, others are in licensing deals.

Items now being produced under the new push—or going into production early next year—include drilling masts, substructures, pumps, all kinds of valves, Christmas trees, drill bits, and oil and gas separators.

Prime reason for the trend: To insure against loss of the Mexican market, which has been worth tens of millions of dollars annually to U. S. oil equipment exporters.

The year-old government of President Adolfo Lopez Mateos has taken the stand that it doesn't want to keep on paying out dollars for large volumes of oil-equipment imports.

Pemex, the state oil entity, already has placed orders—in 1959 alone—for over $2-million worth of locally produced equipment.

To help spur this trend, the government has been dragging its feet on granting import permits. They're now hard to get, involving miles of red tape and months of waiting.

Among other items, Pemex will need some 130 more drilling rigs within the next five years, Pemex president Pascual Gutierrez Roldan estimates. And the Mexicans are hoping they can slice the average $650,000 cost of importing rigs from the U. S. as more parts are manufactured in Mexico.

Eventual export of Mexican-built equipment to other dollar-short Latin American and Caribbean countries is the longer-range target of many of the U. S. manufacturers.

"We're not stopping with just the Mexican market" is a feeling echoed by most of the U. S. newcomers to Mexico. Cameron Iron Works, for instance, is now definitely planning an export push into Central and South America and the Caribbean area. And Ideco, Inc., one of the Dresser Industries, considers it "highly possible" that export of Mexican-made Ideco equipment may become practical in the not too distant future.

FIRST MEXICAN-MADE drilling mast is this Ideco Full View unit, which was completed last month.

A highlight of the new drive: Drilling masts are now being manufactured in Mexico for the first time—under an Ideco license that also covers substructures.

Three 148-ft. portable Ideco Full View masts have been built by Aceros Acatepec S.A., a steel company. It completed the first mast (picture) last month, and now has five more under construction.

Unlike the licensing in Europe for complete Ideco rigs, the Mexican arrangement is a subcontracting deal through Equipo y Servicio Petrolero S.A., the Ideco agent in Mexico. The masts are being manufactured for Ideco Inc., with sales rights retained by Ideco.

The scarcity of Mexican steel that can meet strict specifications is still a big problem in local manufacture of oil equipment, though it's gradually being worked out.

For example: most of the steel for the first Ideco Full View mast had to be imported from the U.S., and some of the local steel offered for subsequent units had to be rejected.

Here are some of the other major U. S. equipment companies with a present or projected stake in Mexican manufacture, and items to be produced by their Mexican subsidiaries or licensees:

• **W-K-M Division of ACF Industries, Inc.,** has licensed production of liners, pump parts, valves, and Christmas trees by Fabrica Industriales Petroleos S. A. This company is now expanding plant operations at Santa Clara.

• **Cameron Iron Works** will start production of valves in about a month from its own $4-million plant, first stage of which is now being completed near Mexico City. James Worsdall, general manager in Mexico, says Cameron will first produce its entire line of valves, and then—in late 1960 and 1961—its entire line of other products.

• **Mission Mfg. Co. and Parkersburg Rig & Reel Co.** have licensed production of a series of items to two Mexican companies—Equipos Nacionales Petroleros, and Cables de Mexico.

The items include piston rods, pump parts, liners, valves, Christmas trees, and separators.

• **Hughes Tool Co.** is now working out a deal with Tamsa, Mexican steel pipe company, for production of tool joints, and possibly tricone bits.

• **Byron Jackson Tools, Inc.,** is moving into production of centrifugal pumps, parts for deep-well pumps, elevators, tongs, spiders, hooks, and other items at its own Santa Clara plant.

• **Joy Mfg. Co., Oil Field Drill Division, and Christensen Diamond Products Co.** both got plants going this year to meet virtually all Mexican demand for diamond bits.

• **Camco, Inc.,** has rented a plant outside Mexico City to make downhole equipment, starting with special gas lift equipment.

• **Otis Engineering Corp.** also is moving in to produce subsurface equipment—in this case, gas-lift valves.

• **Wyatt Metal & Boiler Works,** which produces refinery equipment (towers, columns, heat exchangers) at its own Mexican plant, is now going into oil and gas separators as well.

• **H. C. Smith Oil Tool Co.** is dickering with a Mexican company to produce rock bits.

• **Reed Roller Bit Co.** aims to acquire part or all of a Mexican company.

• **Weatherford Oil Tool Co.** is producing such items as well scratchers and centralizers, through Fabrimex S. A., a subsidiary.

• **Magnet Cove Barium Corp.,** one of the Dresser Industries, is producing drilling mud in Monterrey.

What's New / AROUND THE WORLD

IRAQ—The Iraqi government is now demanding that the Iraq Petroleum Co. group relinquish 60% of all its Iraq concession areas. It also wants a hand in the selection.

Prime Minister Kassim last week announced that Iraq has turned down an offer of 90,000 sq. mi. of the total acreage held by the internationally owned IPC and its two associated companies in Iraq. "We insist that 60% be given up in each of the three concession areas," Kassim said. "We also insist on choosing the areas with the company."

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The emphasis placed by a growing number of U.S. companies on the drive for foreign oil reserves was underscored again last week—this time by Tidewater Oil Co., latest to set up a separate division for that specific purpose.

The new operating division will direct Tidewater's explorations and production work in all foreign areas except its share in the Iranian consortium and in Saskatchewan, Canada.

The unit has been set up in Los Angeles; it is headed by Henry H. Neel as general manager. Exploration manager is Robert Dyk, and production manager John P. McCabe. Regional managers appointed so far are Murray E. Body, in Ankara, Turkey, and Martin H. Mitchell, in Karachi, Pakistan.

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IRAN—The Iranian government denies it was offered an 85-15 profit-sharing deal by the Russians for oil rights in north Iran (PW—Nov.20'59,p43). The widely circulated report, originating in Teheran, was described as "unfounded" in an official statement issued last week by the Iranian Embassy in The Hague.

•

NEUTRAL ZONE—The Japanese say they hope to complete eight offshore Persian Gulf tests by the end of 1960, despite the four-month set back caused by fire in their first wildcat. Drilling was resumed in that test last week.

The Japanese-owned Arabian Oil Co. says it plans to add a second drilling platform next summer, but hasn't yet decided on the contractor and supplier.

SPANISH SAHARA—Sohio and Ipesa, two of the bidders for overlapped acreage, have also bid for three tracts on which no previous applications had been filed.

Sohio bid for block 56, and Ipesa (Investigaciones Petroliferas S. A.), for blocks 18 and 33. Ipesa is owned equally by Magellan Petroleum and Oil Investments, Inc., Panamanian corporations controlled by the Buckley interests of the U. S.

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MEXICO—A second, deeper payzone at the Poza Rica field, Vera Cruz, has reportedly been found by Pemex. The sands are about 1,000 ft. deeper than present production, and Pemex hopes the new horizon will bolster the field's waning production.

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MALAYA—Shell, like Stanvac, plans to build a refinery in the Malay Federation—plus a second plant in Singapore, an independent island state at the southern end of the Malay Peninsula (PW—Dec.4'59,p52).

Shell says the $20.6-million plant in Malaya and the $12.9-million unit in Singapore will meet its major product needs. It has applied for "pioneer industry" certificates, under which both governments grant five-year income tax exemptions.

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EGYPT—The state-owned General Petroleum Co. has brought in a fifth producer at its new Karim field, in the Eastern Desert near the Gulf of Suez.

The No. 5 Karim yielded 31-gravity oil at a test rate of 800 b/d, Cairo announced.

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BURMA—Drilling will be resumed at Yenangyaung, an old producing area that yielded about 500 b/d last year. Burma Oil Co. (1954), Ltd., expects to complete five or six 5,000-ft. wells in the area in 1960.

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Curtice Leaves Signal To Resume Consulting

Arthur A. Curtice, internationally known oil consultant, is resigning as president of Signal Oil & Gas of Venezuela, as of Jan. 31, to return to the consulting field, in New York City.

Curtice is perhaps best known for his work, together with his former partner Herbert Hoover Jr., as consultant and negotiator in preparation of Venezuela's Hydrocarbons Law of 1943.

He also served, in 1944, with Hoover, as advisor to the Prime Minister of Iran; in 1945-46 as petroleum advisor to the Government of Peru (when he wrote the preliminary draft of the Petroleum Law); and in 1947-48 as petroleum advisor to the president of Brazil.

In 1949 he joined Conorada Petroleum Co. as president, later serving as the company's special representative in Venezuela until 1956, when he joined Signal in that country.

Wildcats in the News

COLOMBIA—A sizable flow of wet gas was reported from No. 1 Tolu, on the north coast, 60 mi. south of Cartegena. The wildcat, earlier reported abandoned, is the first indication of success for J. W. Mecom, Texas independent, who is drilling on seven coastal blocks under agreement with Ecopetrol, government oil company, which foots 25% of the exploration costs.

ALGERIA—British Petroleum's French affiliate has spudded its first Sahara test at El Arichel Megta, 440 mi. southeast of Algiers and 200 mi. from Hassi R'Mel, large Sahara gas field. BP holds 50% interest in the company, Soc. Des Petroles de Valence.

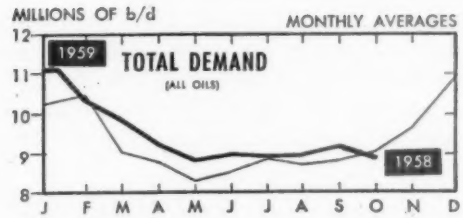
BOLIVIA—Bolivian Gulf Oil is drilling below 3,000 ft. in fifth attempt to find Bolivian production. The No. 1 Nitaigua is 5 mi. from Gulf's first test in the YPFB contract area in southern Bolivia, near the Paraguay border.

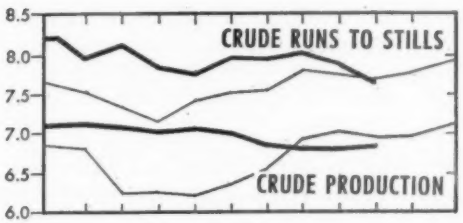
Its fourth test, No. 1 El Cedro, is being drilled below 14,500 ft. toward a 15,000 ft. target in its Zone 1 concession.

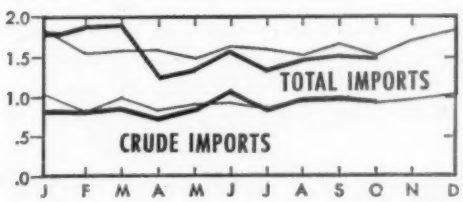
No. 1 Yoay, its third test, was abandoned at 15,257 in the YPFB zone after testing eight salt water zones.

PETROLEUM WEEK'S

Fingertip Figures







Figures for period ended December 4, except as noted

RUNS TO STILLS

Latest week	7.983
Previous week	7.973
Year ago	7.666

CRUDE PRODUCTION

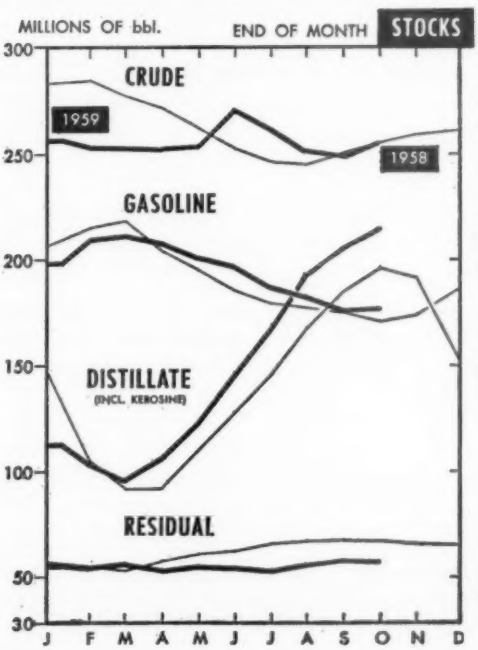
Latest week	7.027
Previous week	6.969
Year ago	7.067

TOTAL IMPORTS

Latest week	1.841
Previous week	1.794
Year ago	1.727

CRUDE IMPORTS

Latest week	1.041
Previous week	1.018
Year ago	.986



CRUDE STOCKS

Week ended 11-28	252.7
Previous week	252.5
Year ago	258.3

GASOLINE

Latest week	181.4
Previous week	179.2
Year ago	174.3

DISTILLATES

Latest week	194.5
Previous week	202.6
Year ago	186.8

RESIDUAL

Latest week	53.9
Previous week	56.1
Year ago	65.1

Supply-Demand Figures for November

(millions of b/d)

	November 1959	% Change from year ago	11 Months 1959	% Change from year ago
Total Demand (Inc. Exports)	10.242	+ 9.9	9.569	+ 4.5
Gasoline	4.020	+ 5.2	4.136	+ 3.9
Distillates (Inc. Kerosine)	2.736	+18.1	2.062	+ 2.7
Residual	1.686	+ 8.6	1.574	+ 6.9
Total Supply	9.471	— 1.3	9.646	+ 4.0
Domestic Crude	6.935	— 0.6	7.031	+ 3.1
Nat. Gas Liquids	.850	.....	.864	+ 7.7
Total Domestic	7.785	— 0.6	7.895	+ 3.6
Crude Imports	.950	— 1.9	.958	+ 1.7
Product Imports	.736	— 8.2	.793	+11.1

Total demand in November topped 10-million b/d—the first time for any November. The movement for the month proved that all the industry needed was a long period of cold weather.

The big boost to demand during the month came from the burning oils, with demand for distillates up 18.1%, and for residual up 8.6%.

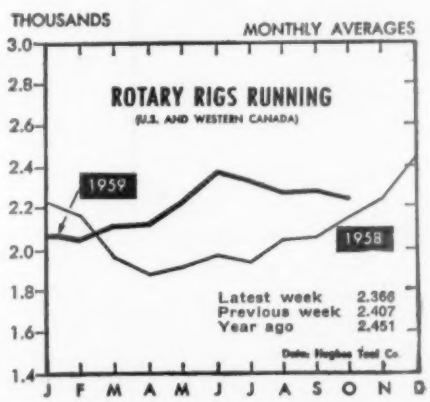
Demand for gasoline was strong too, averaging a little more than 4-million b/d, up 5.2% over last November.

The total movement of 10,242,000 b/d in the month was more than 1.1-million b/d higher than October.

And while demand rose substantially, total new supply was held relatively tight. The result was a much-needed reduction of 771,000 b/d in inventories.

Refinery runs were also held down compared with previous months, with throughput averaging 7,917,000 b/d, only 1.8% ahead of last November.

For the year to date, runs have averaged 5.3% higher than 1958.



The Market Trend

World Markets: Like an Obstacle Course

The have-not oil nations are getting tougher and tougher to deal with. They've wised up to the fact that crude and tankers will be in surplus for a long, long time.

News came out last week that Egypt will try to trade its way for 1960 oil coverage, using its surplus Belayim crude as a wedge. In the past, Egypt tried, without too much success, to sell Belayim in world markets. Now it is making the sale of this high-salt crude a condition of the purchase of outside oils.

Egypt is taking notes from Brazil, which pulled off the same stunt with its surplus Bahia oil. Bahia crude is too waxy for Brazil's refineries, just as Belayim is too salty for Egypt's. So Brazil early this year said that special consideration would be given to world crude sellers who would take a little Bahia in return.

And Egypt must feel that there is safety in numbers. It is understood that the country would like to diversify both its sources of outside oil, and its channels for what Belayim it now sells. As of now, a large portion of Egypt's crude and kerosine purchases are made in the Russian Black Sea. Similarly, for the past two years, most of Egypt's exports of Belayim crude have gone to Italy, with a trickle to Yugoslavia.

Egypt has quite a trading lever, too. Last year, it imported $33-million worth of crude and lube oils, and $24-million of kerosine. The volume ran to about 2.5-million metric tons.

So, with more than $50-million of purchases in world markets as bait, Egypt hopes to move up to 1-million tons of its native crude in surplus. At some day in the future, desalting facilities will make this oil acceptable for home refining. Currently, Egypt's price ideas for Belayim are about $1.49 a bbl. for 22-gravity.

What's happening in Egypt is going on in many other have-not oil nations. They have sensed a buyer's market for crude, and wish to use the situation to move their own commodities in surplus.

Summing up: It's getting tougher to sell foreign crude for a price. Something special always has to be thrown in to make the buyer happy.

Tankers Come Back to Service:

Tankers are coming out of lay-up like crazy, but it's not because the oil market is much better. In October, 28 vessels returned to service; 73 more came out in November.

The vessels coming out of lay-up are mainly to offset the active grain chartering that took place for November and December loadings. And at least 15 ships are being used as temporary power stations to help fill the hydroelectric gap in Scandinavia.

"C" Discounts:

The novelty in international trade this week is sliding-scale discounts to marine fuel buyers. One company put in a discount schedule for 1960, which ranges as high as 5% off for buyers of 75,000 tons and over.

In other years, international suppliers have used "top" price clauses to get customers signed up. However, a top price alone is not much of an attraction when there's a world-wide surplus.

The Market Place AROUND THE WORLD

Prices compiled for PETROLEUM WEEK by Platt's OILGRAM Price Service and National Petroleum News, McGraw-Hill Publications

All prices as of December 7

Bold face type indicates changes from previous week

KEY PRICES—REFINED PRODUCTS

(¢ per gal. except dollars per bbl. where $ is shown)

Western Hemisphere

U. S. Gulf Coast, cargoes
- Gasoline, 98 oct prem....12.25-13
- Gasoline, 92 oct reg....11-11.5
- Kerosine....8.625-10.375
- Heating oil, No. 2....8.125-9.875
- Gas oil, 48-52 d.i....8.375-10.125
- Fuel oil, bunker "C"....$2.00-2.10

Caribbean, cargoes
- Avgas, Grade 100/130....14.75
- Gasoline, 93 oct research prem....11.25
- Gasoline, 87 oct research reg....10.375
- Gasoline, 79 oct research....9.625
- Gasoline, 70-72 oct motor method....9.5
- Kerosine....8.625-8.875
- Heating oil, No. 2....8.125
- Gas oil, 48-52, d.i....8.375
- Fuel oil, bunker "C"....$2.00

New York Harbor, barges
- **Kerosine....9.6↑-10.1↑**
- **Heating oil, No. 2....9.1↑-9.6↑**
- Fuel oil, No. 6....$2.37-2.47

Okla-Group 3, northern shpt., bulk
- **Gasoline, 91 oct reg....10.5-11.25↓**
- **Kerosine....10.5↑-10.75↑**
- **Heating oil, No. 2....9.5↑**
- Fuel oil, No. 6....$1.60-1.80

Chicago, bulk
- Gasoline, 91 oct reg....11.5-11.75
- **Heating oil, No. 2....9.625-11.35↑**
- Fuel oil, No. 6 high sulfur....7.4-7.5

Los Angeles, rack
- Gasoline, 88 oct reg....11.5-12.65
- Diesel fuel, PS 200....7.75-11.25
- Light fuel, PS 300....$2.80
- Heavy fuel, PS 400....$2.15-2.35

Natural Gasoline, Grade 26-70
- FOB Group 3....4.5
- FOB Breckenridge, Tex....4

LP-Gas
- Propane, Oklahoma (Group 3)....5
- Propane, Baton Rouge....5.625-5.875

Pennsylvania Lubes
- Bright stock, 25 p.t....23
- 200 vis. neutral, 25 p.t....25

Mid-Continent Lubes, Tulsa basis
- Bright stock, solvent, 95 v.i....25-26
- Neutral, solvent, 200-210 vis....21.5-22.5

Gulf Coast Lubes
- Bright stock, solvent, 95 v.i....25
- Neutral, solvent, 200 vis....21.5

Eastern Hemisphere

Singapore (Pulau Bukom), cargoes
- Avgas, grade 100/130....15.875
- Gasoline, 79 oct research....10
- Kerosine....10.125
- Gas oil. 48 d.i. minimum....9.625

KEY PRICES—CRUDE OIL

(2¢ differential per deg. of grav. applies except as noted)

Western Hemisphere

United States (at the well)
- Mid-Continent, (Okla.-Kan.), 36.0-36.9....$2.62-2.97
- North Dakota, 36.0-36.9....2.62-2.87
- Texas:
  - Gulf Coast, low cold test, 26.0-26.9....3.50
  - Gulf Coast, Upper & Lower, 26.0-26.9....2.92-3.22
  - West Texas, sweet, 36.0-36.9....3.00
  - West Texas, N. M., inter., 36.0-36.9....2.93
  - West Texas, N. M., sour, 32.0-32.9....2.71
  - East Texas, flat....3.05-3.25
  - Mirando, 28.0-28.9....3.31
- Illinois Basin, flat....3.00
- Pennsylvania Grade, Bradford dist., flat....4.40
- California, Signal Hill, 21.0-21.9....2.22-2.32†
- North Louisiana-Arkansas, 36.0-36.9....2.77-3.02
- Wyoming, sweet, 36.0-36.9....2.85-2.90
- Wyoming, sour, 32.0-32.9....2.63-2.71

Canada (flat prices, at the well)
- Pembina (Alta.)....$2.38
- Leduc-Woodbend (Alta.)....2.53
- Redwater (Alta.)....2.42
- Steelman A (Sask.)....2.435
- Virden (Man.)....2.31

Venezuela (Cargoes, FOB lifting port designated)
- Cumarebo, 47.0-47.9, Tucupido....$3.34
- San Joaquin, 41.0-41.9, Puerto la Cruz....3.10
- Oficina, 35.0-35.9, Puerto la Cruz....2.78-2.80
- Tia Juana, Medium, 26.0-26.9, Amuay....2.30
- Bachaquero, flat, Las Piedras....1.73-1.88
- Tarra, 38.0-38.9, San Lorenzo....2.83
- Lagunillas Heavy, flat, Cardon....2.10

†Differential per deg. of grav. varies.

Eastern Hemisphere

Middle East, Persian Gulf (Cargoes, FOB lifting port)
- Arabia, 34.0-34.9, Ras Tanura....$1.90
- Safaniya, 27.0-27.9, Ras Tanura....1.50
- Iran, 34.0-34.9, Bandar Mashur....1.86
- Iran, 34.0-34.9, Abadan....1.81
- Iraq, 35.0-35.9, Fao....1.80
- Kuwait, 31.0-31.9, Mina-al-Ahmadi....1.67
- Qatar, 41.0-41.9, Umm Said....2.05
- Neutral Zone, Burgham, 23.5-24.4, Mina Saud....1.51
- N. Zone, Eocene-Ratawi, 20.5-21.4, Mina Saud....1.38

Middle East, Eastern Mediterranean
- Arabian, 34.0-34.9, Sidon....$2.27
- Iraqi, 36.0-36.9, Tripoli, Banias....2.31

Far East, Cargoes FOB Lutong, Sarawak
- Seria Light, flat....$2.57

KEY TANKER RATES

(Last paid, per long ton, single voyage)

- U.S. Gulf-New York, clean....(USMC flat) $2.85
- **U.S. Gulf-New York, dirty....(USMC—20%) $2.28↑**
- **NWI-USNH, dirty....(USMC—40%) $1.65↑**
- NWI-UK/Cont., dirty....(Scale—45%) 17/10*
- Persian Gulf-UK/Cont., dirty....(Scale—48¾%) 24/11*
- Persian Gulf-USNH, dirty....(USMC—67½%) $4.13

**Sterling.*

DEPT/Marketing

More Emphasis on Dealer Training

The constantly increasing attention by suppliers to dealer training is typified by American Oil Co. and Mobil Oil Co., which are stepping up and expanding their dealer training programs.

In an attempt to combat high dealer turnover, suppliers are trying to fortify their dealers with a greater understanding of service station operation, and of the potential profits to be found in improved service.

Mobil is extending its 14-year-old training program to the West Coast, by introducing training stations into the marketing districts of General Petroleum Corp.

This move, which is part of the overall unification of Mobil's domestic marketing, will give West Coast dealers the benefits of a training program that is among the most thorough in the industry.

"One of our major innovations on the West Coast this past year," H. J. Peckheiser, vice-president and director of marketing for General Petroleum, told a recent convention of Mobil dealers, "has been the creation of a service station training center in each of our sales districts. These centers are designed to prepare new Mobil dealers for the business they are about to enter."

Amoco is introducing a centralized training program for the first time.

In the past, Amoco relied on dealer training supervised at the local level. Now all Amoco dealers will be trained according to a single plan.

The move also introduces a centralization of training manuals, bringing together in one binder the outline of all subjects to be covered.

Many similarities are apparent between Mobil's time-tested program and Amoco's new approach.

- Both companies have designated training centers or stations at which supervised instruction is given.
- Both companies pay their new-dealer trainees while they are at the training stations.
- The training courses consist primarily of practical or on-the-job training, with an emphasis on learning service station management and merchandising skills.
- Both companies follow up the training courses with clinics or demonstrations on single topics after the dealers assume responsibility for their stations.

AMOCO REGIONAL MANAGER (left) and a station dealer supervise as a prospective dealer performs on-the-job training in the company's new training program.

- Both companies open their training centers to dealers' helpers who may desire the training.
- Both programs provide for the training and familiarization of company salesmen at the training stations.

But there are differences between the two training programs, which demonstrate contrasting viewpoints on how dealers should be trained.

Probably the most important difference is that Amoco will use independent or lessee dealers to perform the actual training, while Mobil is employing experienced company salesmen who have completed a ten-week training course at Mobil's International Retail Training Laboratory in Garden City, New York.

Amoco has chosen dealer stations that are "representative of the majority of the stations" in each district. Mobil, on the other hand, uses company-operated outlets that include special classroom facilities.

Because it is striving for a representation of "average conditions," Amoco has not separated the training and management functions at its training stations. The dealer-trainer must still operate his own station while he is tutoring the trainee in service station operation.

The dealer does, however, have the benefit of the service of the trainee during the two-week, on-the-job training course. In addition, the dealer receives a cash payment from Amoco for every trainee he instructs.

The Amoco program permits a maximum of two trainees at each training station during any two-week training period.

Mobil, using a different approach, has split the dealer and management functions at the training station.

The instructor devotes his full time to training an average of four new dealers at a time. The course runs a minimum of four weeks.

The trainees are not directly connected with the operation of the training station. To take care of the day-to-day business of the station, there is a salaried manager and full contingent of attendants.

Regardless of the approach, both these training programs are an outgrowth of the industry view that "one of the most important ways of reducing dealer turnover is a good training program."

These are the words of Willard W. Wright, vice-president for marketing of Sun Oil Co., and chairman of the Service Station Advisory Committee of API.

Sun has recently demonstrated noteworthy success with its own training program (PW—Oct.5'59,p102). Over a nine-month period, dealers who had gone through the program had a turnover of 2.6%, compared to 44% for dealers assigned without any training.

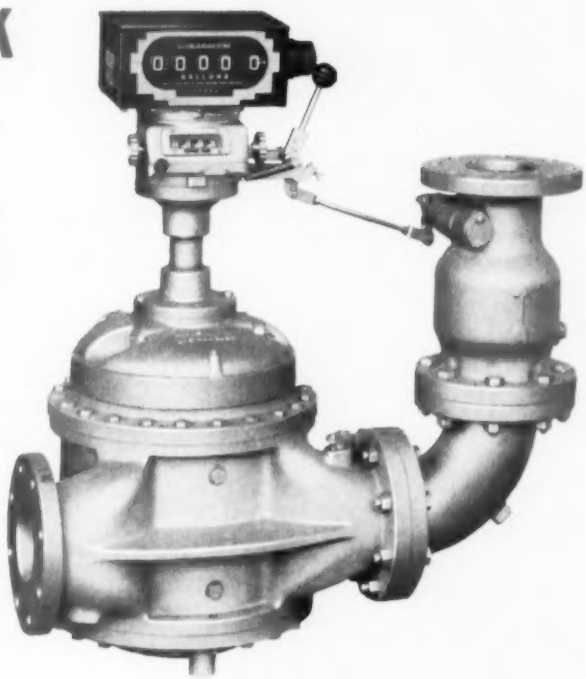
Texaco, Inc. uses
SHOCK STOPPER FOR BULK TERMINAL

Smith-Erie set-stop valves throttle flow, cushion shock

The installation at Texaco's Lockport, Illinois sales terminal is unique because of the large diameter and extensive length of supply lines. Twenty-eight four-inch A. O. Smith Meters are installed at the racks to measure the product . . . pumped from distant storage through 10-inch pipe at a rate of 1400 gallons per minute.

The problem of excessive shock on equipment is solved by A. O. Smith set-stop valves. An exclusive slow decelerating feature throttles down flow during the last 29 gallons of delivery. Texaco reports trouble-free operation over many millions of gallons since plant started up in August of 1958.

If your operations have a metering problem, perhaps an A. O. Smith Meter Man can help. Contact your nearest representative or write direct.



MODEL AB METER — Equipped with Set-stop Counter and slow closing Set-stop Valve for delivering predetermined quantities. Decelerating valve eliminates shock pressure caused by quick closing of ordinary valves. Meter can be easily installed in both vertical and horizontal positions.

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Northwest Balks at Oil-Heat 'Unity'

Oil marketers in the Pacific Northwest have misgivings about the "one world" concept of oil heat promotion, recently approved by the American Petroleum Institute at its fall meeting (PW—Nov.20'59,p45).

"We feel that the adoption of such a program with the Western Region being included would greatly hinder the continuance of the program that we presently enjoy," says Al Loucks, president of the Oil Heat Institute of Oregon.

The Pacific Northwest Advisory Committee, representing five OHI chapters in Washington, Oregon, Idaho, and Nevada, has been acting independently of national groups in promoting oil heat.

The main objection these marketers have to the plan is the possible loss of promotional funds.

"It is [our] opinion," Loucks says, "that, unless a separation is made as far as the Western Region is concerned, we would find ourselves with considerably less monies to work with than we now have."

Mose Vining, chairman of the advisory committee, reaffirmed this view for PETROLEUM WEEK, adding that all OHI chapters in the Northwest take the same position.

Under a national program, says Vining, the Northwest's advertising program of $450,000 a year would be cut to $150,000, because local gallonage is less than that in the East. "Such a limited advertising budget would put us out of business," he says.

In making this estimate, Vining assumes that promotion funds would be allocated on the basis of gallonage. At present, however, promotional funds distributed by the National Fuel Oil Council (which is to be merged into the proposed new national promotion group) are matched equally with locally contributed funds —regardless of gallonage.

The northwestern chapters of OHI would not be opposed to joining the new oil heat organization, however, if they could retain their own promotional program, according to Vining.

Fred Heaney, president of the Oil Heat Institute of America, feels that "a one-roof concept would not interfere with their approach," but maintains that "nobody has spelled out" the policies of the new organization as yet.

Sponsors of the proposed unified oil-heat promotion effort do not consider the objection of the northwestern marketers as a serious threat. "There is no crisis," says one highly placed industry spokesman.

Although unification could mean less money for northwestern marketers, says this spokesman, it is too early to know just how the new organization will allocate funds.

Work will not begin on spelling out the policies of the unit until after Jan. 1.

One industry spokesman close to the formation of the new organization expects that differences between the marketers in the Northwest and in the rest of the country will be ironed out when the two groups meet in the near future.

What's New / IN MARKETING

Major companies are still using coercive and unfair trade practices in TBA distribution, Rep. James Roosevelt (D. Calif.) said this week just before opening his hearings into TBA practices .

These hearings are an outgrowth of Roosevelt's survey of oil marketing practices sent out to 25 major oil companies and 35 associations.

Roosevelt reported on most of the questionnaires at Indianapolis in October (PW—Oct.23'59,p38), but said that he had not then completed his review of TBA practices.

•

Humble Oil & Refining Co. and Mobil Oil Co. have discontinued their coin-operated pump operations in Texas (PW—Sep.25'59,p92).

Humble says that it dropped its experimental coin pump at a Houston station because of a switch to 24-hour attended operation.

Mobil's Magnolia Division says it discontinued two coin pumps, in Houston and Mt. Pleasant, because of maintenance troubles and the lack of public acceptance.

Meanwhile, in Rock Springs, Colo., Fire Marshal Burton Clark is trying to close down a coin-operated pump, which he considers a fire hazard when left unattended.

A hearing on the coin pump was held this week.

•

The American Gasoline Dealers Assn. objects to New York State's recent exclusive purchase agreement with American Oil Co. And last week it told Gov. Nelson Rockefeller why.

The action "will obviously result in diverting the overwhelming bulk of the State of New York business to Amoco service stations, thereby causing stations handling both brands to lose their proportionate share of the business," AGDA wrote.

The association requested that "an appropriate review . . . be made at once."

•

American Oil Co. is currently implementing an expansion of dealers' credit for TBA, oil, and antifreeze purchases.

The new program shifts dealer gasoline deliveries from a load-to-load payment basis to a COD basis, thus freeing credit for increased purchases of TBA.

A spokesman explains that Amoco has already been offering its dealers credit on TBA purchases, but that this plan is part of a move to increase TBA credit and to stimulate expansion of TBA inventories at service stations.

•

Lion Oil Co. is taking a bigger step into the motor oil market with the development of a new multigrade motor oil.

Designed for year-round use, the new lube promises to free motorists from "worry about seasonal oil changes," according to J. H. Sheehan, Lion vice-president and director of marketing.

Other benefits claimed for the new oil include increased gasoline mileage, easier cold weather starting, and longer battery life.

•

Humble Oil & Refining Co. acquired ten more service stations in New Mexico last week.

The stations, formerly owned by Famarris Refinery Products Co., are located in Albuquerque, Ruidoso and Grants. Famarris estimated earlier in the year that the properties represented a $500,000 investment.

DEPT/Service & Equipment Companies

W. T. ALDERSON moves up to vice-president of Ingersoll-Rand Co., with headquarters at the executive offices in New York. He was previously manager of the company's compressor engineering department.

W. T. Alderson

A. B. Horton

ARTHUR B. HORTON has been elected chairman of Chicago Bridge & Iron Co., and **E. E. Michaels**, president, has beeen elected chief executive officer. **R. F. Hendren** is the new executive vice-president and treasurer, and **E. S. Fraser** is manager of plants. Earlier this year, **John T. Horton** was elected a director of the Chicago steel plate fabricating and construction firm.

JAMES D. (Jim) HUGHES has resigned as vice-president of Lane-Wells Co., one of the Dresser Industries, to form a new company, Jas. D. Hughes & Associates, specializing in sales consulting and market research, in Houston. Hughes has also been associated with Eastman Oil Well Survey Co. and Oil Well Engineering Co.

SAM I. KOHEN has joined Stein Hall & Co. as technical representative to the petroleum industry, specializing in the development and application of natural colloids and related products. He will spend most of his time in the southwestern United States. He was most recently assistant manager of the technical service division of Magnet Cove Barium Corp., in Houston.

NORMAN B. CHAMP, JR., vice-president of Midwest Piping Co., St. Louis, has been elected a director. He succeeds **Guy L. Morrill**, who has retired. Champ, who joined the company in 1953, has served as assistant to the president and manager of operations. He was elected vice-president earlier this year.

O. R. BURDEN is president of Universal Engineers & Constructors, Inc., Tulsa, a newly formed company specializing in the construction of equipment for the transmission and refinery branches of the petroleum and chemical industries. Burden is also president of O. R. Burden Construction Corp., Tulsa. Other officers of the new company are: **D. O. Givens**, executive vice-president and general manager; **Verne L. Snow**, vice-president; **H. D. Peters**, treasurer; and **J. Ray Stough**, manager of sales.

FRANK T. HOUSE is the new sales promotion manager, and **Hermann A. Burkhardt** is the new publicity manager, for Bucyrus-Erie Co., South Milwaukee, Wis. Burkhardt will report to House, and House will report to **L. C. Black**, vice-president in charge of sales. House was recently transferred from the company's Atlanta (Ga.) office to South Milwaukee as sales development manager for commercial cranes and excavators. Burkhardt, who has been in the advertising and publicity department for the past 20 years, has served as advertising production manager, space buyer, and publications manager.

TOM R. BRADLEY becomes vice-president in charge of sales for Warner Lewis Co., division of Fram Corp., Tulsa supplier of water separation equipment to the petroleum industry. Bradley, who has been with Warner Lewis for the past eight years, was named sales manager in 1955.

MAURICE O. DULMAGE is the new treasurer of American Coldset Corp., makers of diamond drill bits, diamond coring bits, and diamond tools and wheels, in Teterboro, N.J. He has been controller since 1957.

M. O. Dulmage

D. K. Ridley

DOUGLAS K. RIDLEY is the new contract sales manager for automatic control equipment produced by Minneapolis-Honeywell Regulator Co.'s Brown Instruments Division and its other industrial products group units. Ridley joined Honeywell's Commercial Division in 1947. He served as regional sales manager in Dallas and Chicago before his new assignment.

S. DOUGLAS TURNER has been appointed general manager of Big Inch Pipe Corp., Ltd., newly formed company in Calgary. Turner will administer the operation of a large-diameter pipe mill located there. He has been in the law department of Imperial Oil Ltd., and, for the past four and one-half years, has been the Alberta division manager of the Canadian Petroleum Assn.

MARK D. DISOSWAY moves up from senior sales engineer to assistant export sales manager of the Electro-Motive Division of General Motors Corp., La Grange, Ill. Disosway, with the Electro-Motive Division since 1938, became a sales engineer in the sales engineering section in 1948, and in 1950 was named manager of that section.

H. R. SAFFORD, JR., is the new executive vice-president of the Petroleum Equipment Suppliers Assn., with headquarters in Houston. He has been executive secretary of the association since 1946.

JOHN M. VOSSLER & CO., North Hollywood, Calif., is exclusive sales representative in Southern California for Conoflow Corp. Conoflow, a subsidiary of Walworth Co., manufactures final control elements.

GORDON KIDDOO has been appointed general sales manager of the process equipment division of Air Products, Inc., Allentown, Pa. Before joining Air Products, Kiddoo was vice-president of National Research Corp. and Columbia-National Corp., both in Cambridge, Mass. With the addition of Kiddoo to its management staff, Air Products plans expansion of its activities in the chemical and petrochemical fields, both as a supplier of process equipment and plants and as operator of plants to supply gases, liquids, and intermediate chemicals.

G. Kiddoo

R. P. Charnaux

RAYMOND P. CHARNAUX has been appointed director of foreign operations for ACF Industries, Inc., with headquarters in New York. He comes to ACF from Yale & Towne Mfg. Co.'s international operations. Before that, he managed international operations for Robertshaw-Fulton Controls Co.

LARRY S. KERN becomes sales representative of Neptune Meter Co., with headquarters at the San Francisco-Millbrea office. Kern's territory will be northern California and western Nevada. He has been with Neptune since 1956.

L. S. Kern

D. Fagan

DON FAGAN transfers from Odessa to Pampa, Tex., for Gulf Coast Machine & Supply Co. Fagan returns to Pampa after several years' experience in sales and service of wellhead equipment in West Texas and New Mexico.

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Hubbard 7-7160

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H. Sherman Davis
520 N. Michigan Avenue
Mohawk 4-5800

Cleveland 15 — J. E. MacArthur
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Superior 1-7000

Denver 2 — J. W. Patten
Mile High Center, 1740 Broadway
Alpine 5-2981

Houston 25 — D. O. Hanson
724 Prudential Bldg.
Jackson 6-1281

Los Angeles 17 — Peter S. Carberry
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Huntley 2-5450

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Philadelphia 3 — W. A. Fotter
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DEPT/Personals

JOHNNY MITCHELL, partner in Christie, Mitchell & Mitchell, Houston, has been elected president and a director of Jade Oil Co., Beverly Hills, Calif. He succeeds **Harry M. Frank,** El Paso, who becomes chairman and chief executive officer. Other new officers of the company are: **H. L. Leach,** Denver, vice-president and treasurer; **J. Roy Derrick,** Midland, vice-president; **Paul A. Smith,** Houston, secretary; and **B. F. Clark,** Houston, assistant treasurer. Mitchell will stay in Houston, where Jade Oil has recently set up an operations office.

M. E. Houser

J. Mitchell

MARK E. HOUSER, director of manufacturing of Wilshire Oil Co. of California, has been elected vice-president of manufacturing. In addition to managing Wilshire's Santa Fe Springs (Calif.) refinery, Houser is responsible for the pipeline department and for economic research.

G. M. BOYER has been promoted to the newly created position of assistant to the vice-president of Continental Oil Co.'s foreign crude and products distribution department, with offices in New York. He was most recently assistant division marketing manager on special assignment at Houston. Boyer, with Conoco since 1947, became assistant manager of bulk sales at Houston in 1955. He was sales development manager for the central region at Oklahoma City and assistant division marketing manager at Ft. Worth before returning to Houston in 1958.

MAX P. WATSON becomes assistant to **Ed Parkes,** president of United Gas Corp., and its subsidiaries, Union Producing Co. and United Gas Pipe Line Co., in Shreveport. Watson, who joined the company in 1937, was named manager of gas purchases in the gas supply department of United Gas Pipe Line earlier this year.

J. B. DICKEY has been promoted to the new position of coordinator of domestic wax sales for Continental Oil Co., with headquarters in Houston. He was formerly manager of marketing for Conoco's Memphis (Tenn.) division.

ALBERT T. C. RUTGERS is the new gas supply and reserve representative for Western Canada for Northern Natural Gas Co. Rutgers succeeds **W. E. Ainsworth** as head of Northern's office in Calgary. Ainsworth, who was temporarily assigned to Calgary last spring to establish the office, has returned to the company's headquarters in Omaha, Neb. Before joining Northern, Rutgers served as senior reservoir geologist for Pacific Petroleums, Ltd., in Calgary.

R. J. Christensen

F. E. Merliss

R. J. CHRISTENSEN is Oil Recovery Corp.'s new manager of production and engineering, and **FREDERICK E. MERLISS** is the new manager of research and development. Christensen has been the company's district engineer and Merliss has been manager of production and exploration research for Cities Service Research Development Co. **Lee Bentley** has been named manager of the commercial department, and **H. J. Ramsay, Jr.,** has joined the company as an evaluation engineer. Ramsay was formerly a petroleum engineer for Mobil Oil Co., in Andrews, Tex. The four men will be located at Oil Recovery's enlarged division office in Tulsa.

JOHN MOORE WILLIAMS, Salt Lake City, has been elected president-general manager of the new American Mineral Resources Assn., formed to promote the welfare of industries involved in mining, oil and gas, water conservation, and public lands. Other officers of the new association are: **Duane C. Randall,** Moab, Utah, first vice-president; **Irwin C. Glaser,** Salt Lake City, second vice-president; **Robert Carlson,** Salt Lake City, third vice-president; and **Wendel T. Hackett,** Salt Lake City, fourth vice-president. Members of AMRA will be solicited from industries dependent of the natural resources of this country.

CLARENCE F. FLEISCHNER has joined the Warwick Wax Division of Western Petrochemical Corp., in New York, as general sales manager. He was previously supply sales manager for the Pure-Pak Division of Ex-Cell-O Corp.

PHILIP JOHNSON, associate professor of petroleum engineering at Texas Technological College, Lubbock, has been named chairman of the West Texas Oil Lifting Short Course. He succeeds **Prof. W. L. Ducker,** who founded the short course, held each April on the Texas Tech campus. Ducker will continue with the short-course organization as administrative advisor. **Barney O. Carlson,** Shell Oil Co., will be general chairman of the 1960 course. Other directors of the course are: **Ray J. Diekemper,** independent oil operator, Lubbock; **Rex Brown,**

Southwestern Public Service Co., Levelland; **A. F. Cox,** Amarillo Oil Co., Amarillo; **A. S. Donnelly,** Honolulu Oil Co., San Francisco; **John Evans,** Standard Oil Co. (Ind.), Chicago; **Howard H. Hinson,** Continental Oil Co., New York; **Dysart E. Holcomb,** El Paso Natural Gas Co., El Paso; **George P. Livermore,** Livermore Drilling Co., Lubbock; **Neal McCaskill,** Atlantic Refining Co., Midland; and **T. Coleman Williams,** Honolulu Oil Co., Denver City.

ROBERT E. YANCEY and **ORIN E. ATKINS** have been named to the newly created positions of administrative vice-presidents for Ashland Oil & Refining Co., Ashland, Ky. Yancey, formerly vice-president of manufacturing, joined the company in 1943 as a chemical engineer. Atkins, formerly coordinating executive assistant, joined Ashland in 1950 as an attorney in the law department. Yancey and Atkins will assist other executives in the administration of general company affairs.

MARVIN F. MILLER has been named manager of labor relations for Standard Oil Co. of California, San Francisco. He was formerly assistant general manager of the company's Richmond (Calif.) refinery. In his new position, he succeeds the late **Harry R. Miller.**

M. F. Miller

A. A. Diffey

ALEX A. DIFFEY becomes assistant general manager of marketing for Esso Standard Oil Co., in New York. For the past two years, Diffey has been operations manager in Esso's marketing department. Before that, he served as manager of the North Carolina sales division and as assistant manager of the New England division. In his new position, Diffey succeeds **George W. Butler,** who has been named deputy coordinator of world-wide marketing activities for Standard Oil Co. (N. J.).

GEORGE R. BROWN has been appointed assistant manager of Texaco Exploration Co., Canadian subsidiary of Texaco Inc., in Calgary. He succeeds **Roy Whisenhunt,** who has been named assistant manager of the Midland (Tex.) division of Texaco's domestic producing department. Brown was formerly staff petroleum engineer in the New York office of that department.

JOHN E. WALTERS was awarded first prize for a paper making an important contribution to the knowledge of petroleum geology in the Gulf Coast area, at the recent annual meeting of the Gulf Coast Assn. of Geological Societies, in Houston. Walters is Texas Division geologist for Michel T. Halbouty. Walters' paper was entitled, "Effect of Structural Movement on Sedimentation in the Pheasant-Francitas Area, Matagorda and Jackson Counties, Tex." Second prize was awarded to **Ramsey L. Oakes,** independent geologist from New Orleans, for his paper entitled, "The Grandison Complex, Lafourche and Jefferson Parishes, La." **Hugh A. Bernard, C. Fred Major,** and **B. S. Parrott,** geologists with Shell Development Co., were awarded third prize for their paper, "The Galveston Island and Environs."

DON F. CARLOS has been named executive assistant to **Thomas G. Kelliher,** manager of Tidewater Oil Co.'s home office exploration department, in Los Angeles. Carlos has been southern division exploitation geologist, in Houston, since 1957. He joined Tidewater in 1947 as an assistant exploitation geologist.

D. F. Carlos

J. D. Willson

JAMES D. WILLSON is the new controller for Tidewater Oil Co., Los Angeles. He succeeds **Russell D. Richardson,** who had continued to serve as controller after his appointment as finance vice-president last year. Richardson continues as finance vice-president and as a member of the executive management group. Prior to joining Tidewater, Willson was finance vice-president and a director of Norris-Thermador Corp., in Los Angeles.

HENRY L. HILLMAN has been elected chairman of Texas Gas Transmission Corp., Owensboro, Ky. Hillman, who has been a director of the company for several years, is president of J. H. Hillman & Sons Co. and Pittsburgh Coke & Chemical Co.

ROY B. MIDDLETON is the new advertising coordinator of DX Sunray Oil Co., Tulsa. Middleton, who joined the company's advertising department in 1954, was most recently advertising supervisor. He succeeds **Leigh S. McCaslin, Jr.,** who recently became a vice-president of Potts-Woodbury, Inc., Kansas City (Mo.) advertising agency. McCaslin will be in charge of Potts-Woodbury's new Tulsa office, and will serve as account supervisor on the DX Sunray account.

JEFF WATTS has joined Buttes Gas & Oil Co., Oakland, Calif., as chief petroleum engineer and assistant general manager. Watts was most recently an independent consultant, and was retained by Buttes to evaluate natural gas reserves. Up until March of this year, Watts was gas reserve engineer for Pacific Gas & Electric Co.

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Optimism and Reality Go Hand in Hand

A GROWING NUMBER of top company officials are voicing optimism over the industry's economic outlook. Their comments generally are that the oversupply of products is not too bad, and that the growth in demand next year will absorb a good part of the surplus inventories.

One such view came from Eugene Holman, chairman of Standard Oil Co. (N. J.). "I feel we are being a little hysterical regarding the oversupply situation," he said in Houston last week. "We're not in bad shape at all, considering some of the things the industry has had to go through in the past."

No doubt all oil men hope the outlook proves that good.

It's high time for the industry's outlook to be optimistic. Oil started 1959 with strong hopes of a good year. It has proven to be a "recovery" year for demand, with the expectation now that total demand for all of 1959 will be up about 4.4% over 1958.

The industry became a little too optimistic at the start of 1959, however. And the result was oversupply.

In reality, the industry's outlook for any year depends on the industry itself. The pattern of growth in demand generally is beyond the industry's control. But the industry is usually able to predict what the total volume will be with a high degree of accuracy. And it also seems to know what the required rate of supply should be to meet demand.

IT IS UP TO THE INDIVIDUAL COMPANIES to relate their own supply to a realistic expectation of what their own markets will be. As one economist notes: "Excess supply always seeks a market at reduced prices." That's been the story during this year—oil's Centennial Year. It could very easily be the story of next year and next year and next year—unless individual sights are geared to reality.

The present indications for next year are that total U.S. demand may run 300,000 b/d or more above 1959. That would be about the same gain in volume as in the current year. It's a good steady growth trend, but not one that will permit "pulling out all the stops" on production and refinery runs.

A GROWTH IN DEMAND—regardless of how optimistic it may appear—does little good if the industry oversupplies the market. No one—including the consumer in the long run—benefits.

FREFLO*— a mixture of oil-soluble chemicals designed to remove water blocks in oil and gas wells — by reducing surface tension, attacking interfacial tension and breaking emulsions. 10-gallon drum contains enough for 1000 gallons of treating solution. Available at Dowell stations.

CORBAN*— a complete line of polar-type inhibitors to combat corrosion in oil and gas wells. Available in a number of formulas and concentrations, in both liquid and stick form. Corban is supplied in 10, 20 and 50-gallon drums and in bulk lots at Dowell stations.

MUDBAN*— a non-acid, mud-dispersing agent for removing filter cake from the face of formations, for removing mud lost in formations, and for freeing stuck drill pipe. Recommended for clean-up treatments. Sold in 10-gallon steel drums at Dowell stations

GYPBAN*— a complex phosphate sequestering agent for prolonged protection from production-restricting gyp accumulations— in the formation and on well equipment. Non-toxic and oil-insoluble. Available at Dowell stations in 50-pound fiber cartons.

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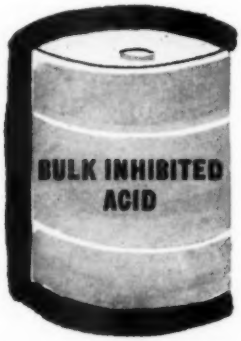
JELFLAKE*— a fragmented, plastic foil added to drilling muds or cement slurries to prevent or stop lost circulation. Particles vary in size for more effectiveness. Packed in strong, wet-proof bags. Available at major mud distributors and Dowell stations.



BULK INHIBITED HYDROCHLORIC ACID — has many uses, including: cleaning scale and gyp from producing formations, tubing and lead lines; cleaning scale from piping, engine jackets, heat exchangers, valves and fittings; dump-job treatments in old wells. Supplied in bulk lots at Dowell stations.

POLYDRIL*— an organic, water-soluble polymer used in clear water drilling for rapid settling of solids. It has increased drilling rates and bit life, and lowered mud costs. Supplied in a semi-liquid, easy-to-use state. Polydril is available at Dowell stations in 5-gallon cans.

PARAFFIN SOLVENT — a non-chlorinated, concentrated, oil-soluble chemical solution designed to dissolve paraffin, even when complicated by asphalt, salt, sand, gum, or wax. Packed in easy-to-handle 10-gallon steel drums. Sold at Dowell stations and major supply stores.

SEEING IS SAVING...

One important advantage of plant models is that management can fully exercise their judgment and experience in approving design and layout *before* construction starts.

Here, SunOlin Chemical Company vice-president S. S. Johnson and president James I. Harper are shown reviewing, with Kellogg project manager Robert Jacks, details of their new 200 ton/day urea plant—now being built by Kellogg, using the Fauser-Montecatini Process.

For SunOlin, as for many Kellogg clients, scale models have proved to be an unequalled communications tool for management . . . a superior design tool for engineers . . . a modern construction tool for field workers . . . a sure way, in every way, to minimize man-hours and materials.

Kellogg-built models have obviated planning stages and piping key plans . . . eliminated hundreds of complex drawings . . . avoided countless hours for reviewing, changing, and interpreting design and construction details on paper . . . saved clients real time and money from plant conception to completion.

To learn more about this economic, Kellogg-developed approach to engineering and building new plants, write for the 12-page Model Kelloggram.

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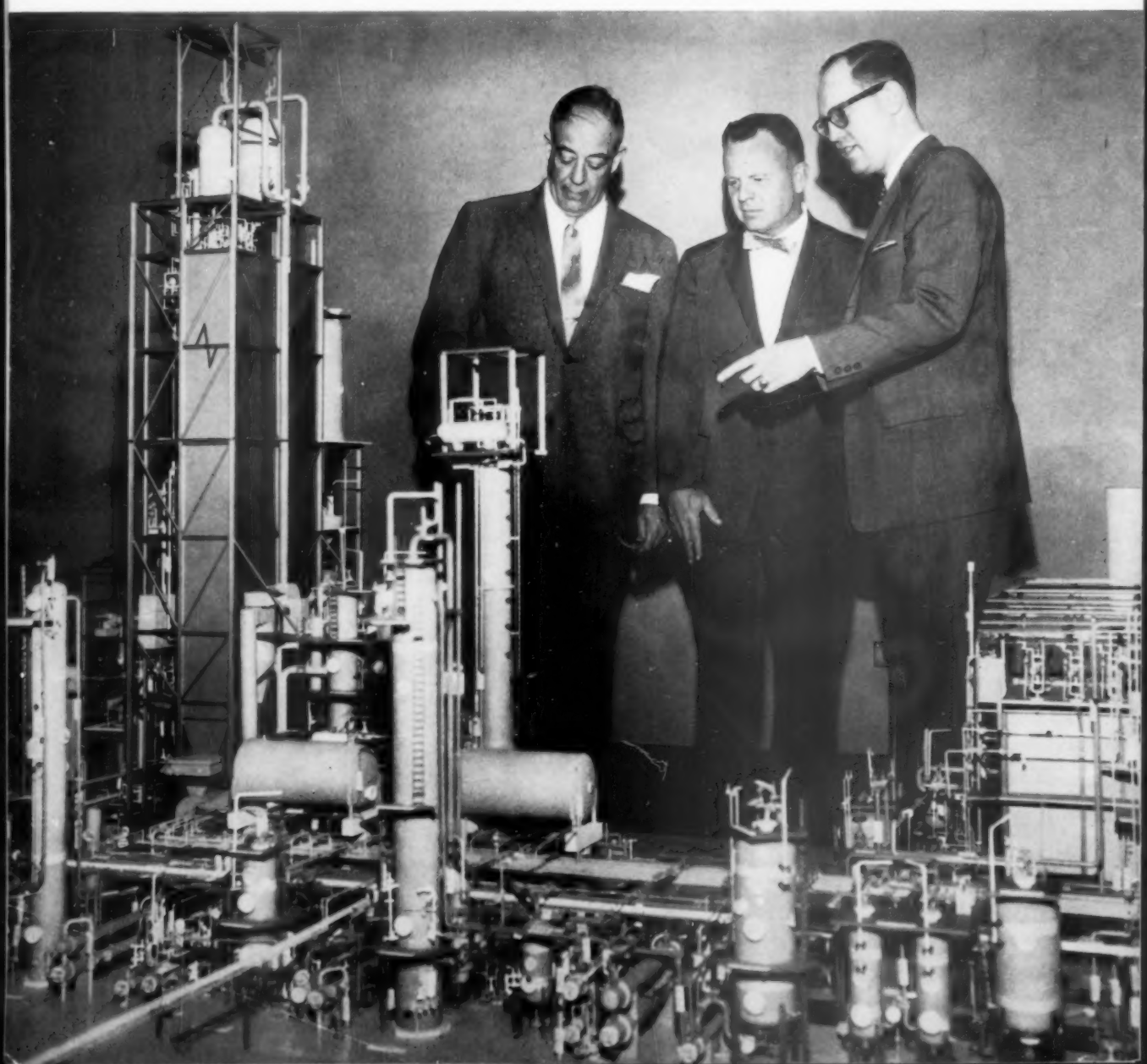
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